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**Oceanographic Data from Sur Ridge (36.3°N, 122.4°W) to  
Hoke Seamount (32.1°N, 126.9°W), May 1999**

by

T. Rago, C. A. Collins, C.-S. Chiu, P. Worcester, and C. G. Castro

June 2000

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13. ABSTRACT (maximum 200 words)  This data report contains oceanographic data collected along the geodesic between Sur Ridge (36.3°N, 122.4°W) and Hoke Seamount (32.1°N, 126.9°W). Tables of water properties (temperature, salinity, dissolved oxygen, and nutrients) are included, as well as figures which show results of bathymetric and ocean current measurements. Finally, a sample of video images of fauna observed on the summit of Hoke Seamount is included.				
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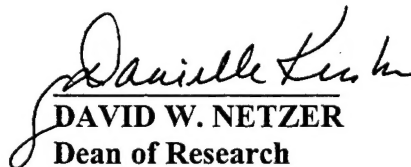
**This report was prepared by: Thomas A. Rago, Curtis A. Collins, Ching-Sang Chiu, Peter Worcester and Carmen G. Castro**

**Reviewed by:**

**Released by:**



**ROLAND W. GARWOOD, JR.**  
Professor and Chairman  
Department of Oceanography



**DAVID W. NETZER**  
Dean of Research

## Table of Contents

Section	Page
List of Figures	i
1. Introduction	1
2. CTD	1
a. Salinity Calibration	3
b. Nutrient Measurements	3
c. Data Presentation	3
3. VM_ADCP	5
4. Bathymetry	7
a. Sur Ridge to Hoke Seamount	7
b. Hoke Seamount	7
5. Video Images of Hoke Seamount Summit	9
6. Acknowledgements	9
Appendix A-- CTD Tables	11
Appendix B-- Nutrient Tables	44
References	53
Initial Distribution List	54

## List of Figures

Figure	Page
1. CTD Station Sites	2
2. Sections of Water Properties from Sur Ridge to Hoke Seamount	4
3. ADCP Current Velocities Across and Along the Section from Sur Ridge to Hoke Seamount	6
4. Bottom Topography from Hoke Seamount to Sur Ridge	7
5. Bathymetry for the Area near the Hoke Seamount Summit	8
6. Still Images of the Summit of Hoke Seamount	10



Ocean Acoustic Federation: California Current Tomography  
1999 Hoke Seamount Data Report

## 1. Introduction

In May 1999, an HLF-5 acoustic transmitter was moored on the top of Hoke Seamount (32.1°N, 126.9°W) to test the feasibility of tomographic imaging of the California Current system. In addition to mooring activities, CTD (conductivity-temperature-depth), ADCP (acoustic Doppler current profiler) and bathymetric data were collected along the geodesic between Hoke Seamount and Sur Ridge (36.3°N, 122.4°W) (figure 1). This report does not address any aspects of the mooring at Hoke Seamount, but instead is intended to document the procedures used to collect all the other data from this cruise and to provide listings of subsets of these data.

## 2. CTD

Hydrographic data were acquired at 33 sites along the line from the Hoke Seamount to Sur Ridge (figure 1) using a Seabird 911-Plus™ CTD. The CTD sampled at 24 Hz, and was fitted with dual Seabird temperature (SBE-3) and conductivity (SBE-4) sensors, a Chelsea fluorometer, a SeaTech Transmissometer, and a Seabird oxygen probe. The CTD is maintained for use aboard the *R/V Point Sur* by the Marine Operations division of Moss Landing Marine Laboratories (MLML). The MLML CTD is mounted horizontally at the bottom of its frame, with both primary and secondary temperature and conductivity sensors mounted alongside. Each temperature/conductivity pair has a common access tube to the seawater, with all the sensors mounted such that both seawater access tubes are equally well clear of all obstructions to the water flow while the CTD is in operation. For this cruise, the various sensors had been calibrated by their respective manufacturers as follows:

Primary Temperature (s/n 2632):	11 February 1999
Secondary Temperature (s/n 2673):	11 February 1999
Primary Conductivity (s/n 2196):	9 March 1999
Secondary Conductivity (s/n 2197):	9 March 1999
Pressure (s/n 75425):	19 January 1999
Chelsea Fluorometer (s/n 88210):	10 February 1999
SeaTech Transmissometer (s/n 243DR):	26 February 1999
Oxygen (s/n 354):	14 August 1997

Pre- and post-cruise temperature calibrations differed by a maximum of 0.000025°C.

A Seabird rosette sampler was attached above the CTD and was equipped with twelve 10-liter Niskin bottles for *in situ* water sampling. Water samples were collected at standard depths (Appendix B) for chemical (nutrient) analyses and for CTD salinity calibration. No *in situ* water samples were collected for oxygen sensor calibrations.

In general, at each station the CTD was lowered to about 100 meters at a speed of approximately 0.5 m·s<sup>-1</sup>, and thereafter to 1000 meters (or the bottom, whichever came first) at a speed of 1.0 m·s<sup>-1</sup>. Approximately every fourth station the CTD was lowered beyond 1000 meters

to the bottom (Appendix A). A minimum of two water samples-- one at the deepest depth of the cast and one near the surface-- was collected during the upcast at each station for salinity calibration. For those stations which went deeper than 1000 meters, additional water samples were also collected below 1000 meters for salinity calibration. These water samples were then analyzed in the laboratory immediately following the cruise using a Guildline Autosol 8400B salinometer, which itself had been standardized using Batch P132 standard Wormley water.

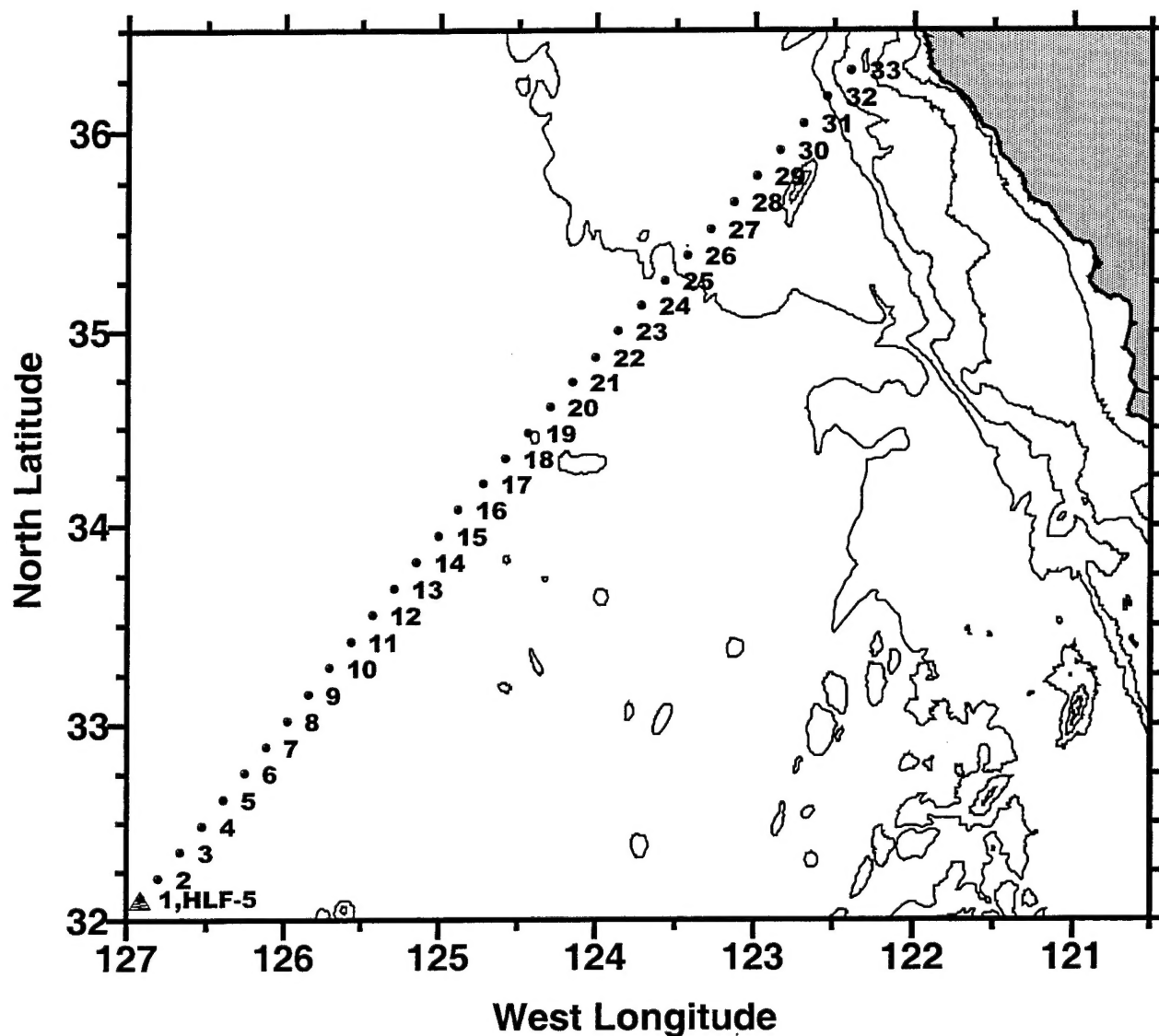


Figure 1. CTD Station Sites. The 200, 1000, 2000, 3000, and 4000 meter isobaths are shown.

### **a. Salinity Calibration**

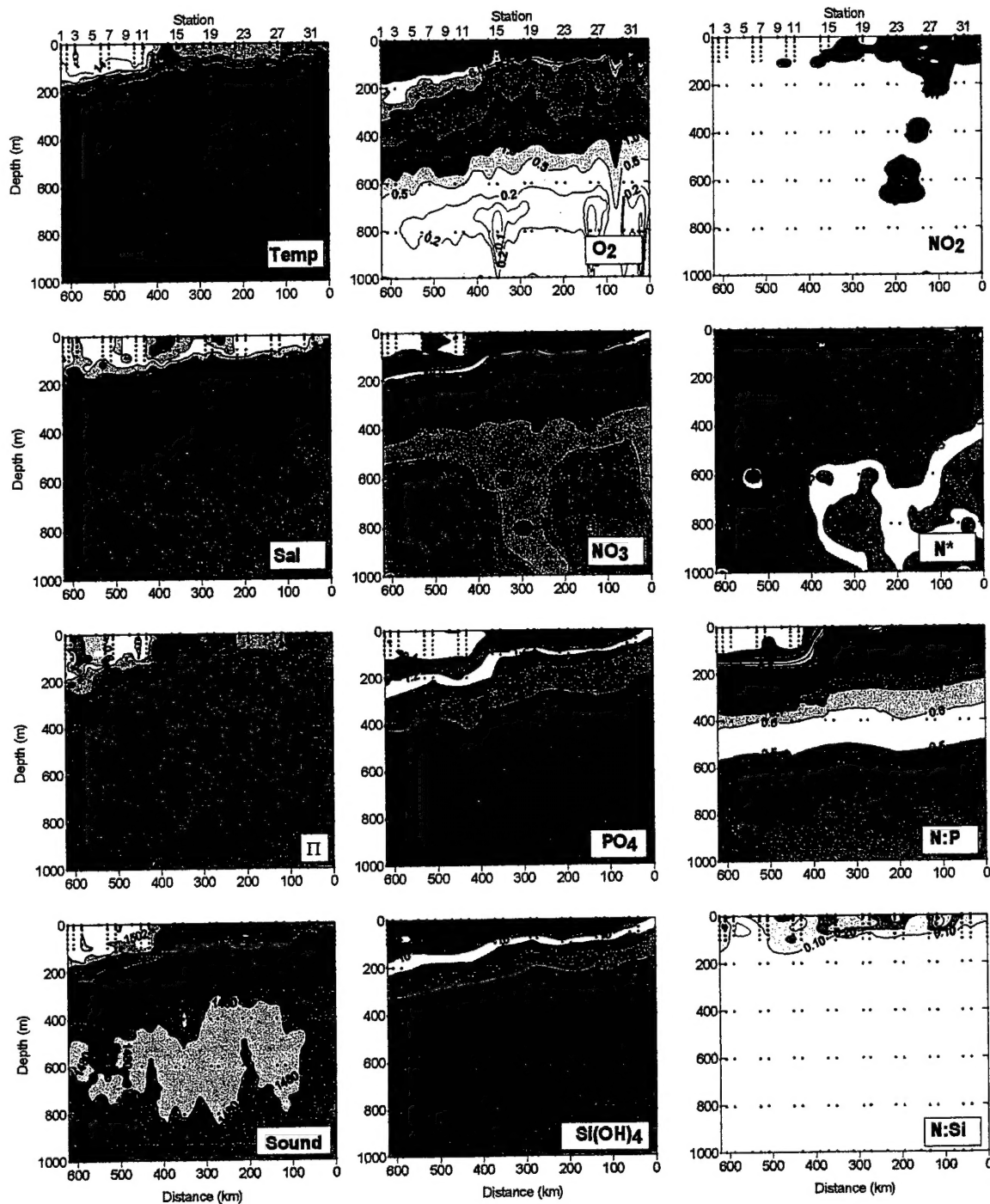
With dual temperature and conductivity sensors there are four possible calculations of CTD salinity. The salinities determined by the Autosol for the collected water samples were directly compared with each of the calculated CTD salinities recorded when those water samples were captured by the Niskin bottles. Ninety-five deep water samples, where deep is defined as greater than 800 meters, were thusly compared. For each sensor combination the mean and standard deviation of the salinity difference (Autosol measured salinity-CTD salinity value) were determined. All data values greater than two standard deviations beyond the mean were then removed, and new means and standard deviations were determined. The results of these manipulations showed that using both secondary CTD sensors (temperature and conductivity) produced the best calculated CTD salinity for this cruise. Thus, based on a final total of 90 water samples, the CTD salinity (S11) in this data report has been corrected by an offset of +0.0014. (The standard deviation of this offset was  $\pm 0.0011$ .)

### **b. Nutrient Measurements**

Samples of nutrients were drawn into 25 ml polyethylene containers. These were rinsed twice before filling. Samples were immediately frozen at  $-20^{\circ}\text{C}$ . Nutrient analyses were performed by segmented flow analysis with an Alpkem rapid flow analyzer (RFA) system. Nitrate, nitrite, phosphate and silicate were determined simultaneously. Determinations were carried out according to the methods described by Sakamoto *et al.* (1990). Nitrate+nitrite was determined after reduction of nitrate to nitrite by a copper-coated cadmium metal column and the total nitrate+nitrite is measured as an azodye at an absorbance of 540 nm. Nitrite is also determined as an azodye. The determination of phosphate is based on the reaction of the ions with an acidified molybdate reagent. Under acid conditions a phosphomolybdate complex is formed which is subsequently reduced to a phosphomolybdenum blue complex detectable at 820 nm. The determination of silicate is based on the formation of a yellow silicomolybdic acid, which is then reduced with stannous chloride to a coloured blue complex and measured at an absorbance of 880 nm. Analytical errors for nitrate, nitrite, phosphate, and silicate are  $\pm 0.06 \mu\text{mol-l}^{-1}$ ,  $\pm 0.005 \mu\text{mol-l}^{-1}$ ,  $\pm 0.003 \mu\text{mol-l}^{-1}$ , and  $\pm 0.19 \mu\text{mol-l}^{-1}$ , respectively.

### **c. Data Presentation**

CTD data are presented both as tables in the appendices of this report and as a series of graphs (figure 2). Appendix A lists the CTD data for selected depths for all the CTD stations. Density anomaly, specific volume, dynamic height, and spiciness are computed from the processed, corrected values of pressure, temperature, and salinity. The density anomaly ( $\gamma_{\theta}$ ) was calculated using potential temperature referenced to the ocean surface. Except for spiciness, derived quantities were calculated using algorithms given in Volume 4 of the International Oceanographic Tables (UNESCO, 1987). Spiciness ( $\pi$ ) was computed with algorithms of Pierre Flament (1986) using potential temperature. The tables in Appendix A are presented with the following parameters, units and symbols:



**Figure 2.** Sections of water properties from Sur Ridge to Hoke Seamount. Axes are distance (km) from Sur Ridge versus depth (m). (CTD station sites are shown at the top of the figure.) The property being mapped is shown on each diagram. Units are the same as given in Appendices A and B. Sound speed is in m/s; ratios (N:Si, N:P) are dimensionless. N\* (units =  $\mu\text{mol/kg}$ ) is defined by Gruber and Sarmiento (1997).

Pres [dbar]	pressure
Temp [°C]	potential temperature (1990)
Sal	salinity (from secondary sensors)
$\gamma_\theta$ [kg-m <sup>-3</sup> ]	density anomaly
$\delta$ [10 <sup>-8</sup> m <sup>3</sup> -kg <sup>-1</sup> ]	specific volume anomaly
$\Sigma\Delta D$ [10 <sup>-1</sup> m <sup>2</sup> -s <sup>-2</sup> ]	dynamic height
$\pi$	spiciness
Trans. [percentage]	transmissivity
Oxygen [mg-l <sup>-1</sup> ]	oxygen concentration

Appendix B lists the nutrient data at the standard depths at which Niskin bottles were tripped during the CTD casts. The tables in Appendix B are presented with the following parameters, units, and symbols:

Pressure [dbar]	pressure
Temperature [°C]	temperature
Salinity	salinity (from secondary sensors)
PO <sub>4</sub> [μmol-l <sup>-1</sup> ]	phosphate
Si(OH) <sub>4</sub> [μmol-l <sup>-1</sup> ]	silicate
NO <sub>3</sub> [μmol-l <sup>-1</sup> ]	nitrate
NO <sub>2</sub> [μmol-l <sup>-1</sup> ]	nitrite

Finally, in addition to the standard water properties, figure 2 presents vertical distributions of the nutrient ratios (nitrate:phosphate [N:P], nitrate:silicate [N:Si]) and of N\*. N\* is a quasi-conservative parameter that estimates the nitrate deficit/excess of the water masses (Gruber and Sarmiento, 1997). In this derived parameter all the nitrate variability due to remineralization of organic matter is removed. Consequently, the remaining variability is due to denitrification less nitrogen fixation processes in the water column. N\* is defined as a linear combination of nitrate (NO<sub>3</sub>) and phosphate (PO<sub>4</sub>) in the form

$$N^* = (NO_3) - (r_{nitrN:P})(PO_4) + \text{constant},$$

where  $r_{nitrN:P}$  is the N:P stoichiometric ratio during aerobic oxidation of organic material. Using values of 16, -104, and 125 as N:P ratios for nitrification, denitrification, and nitrogen fixation, respectively, Gruber and Sarmiento (1997) arrive at the following relationship:

$$N^* = (NO_3 - 16 \times PO_4 + 2.90) \times 0.87 \mu\text{mol-kg}^{-1}.$$

High concentrations of N\* (>2.0 μmol-kg<sup>-1</sup>) suggest the prevalence of nitrogen fixation processes. On the other hand, low levels of N\* (<-3 μmol-kg<sup>-1</sup>) point to a prevalence of denitrification.

### 3. VM-ADCP

Continuous ADCP data were collected throughout the cruise using the ship-mounted RD Instruments 150 kHz narrow band ADCP. Five-minute ensemble averaging was used. Navigational input was supplied to the data stream by a differential GPS unit. An Ashtech GPS receiver also supplied attitude information to the data stream. The ADCP data were processed using the CODAS software of the University of Hawaii (Firing *et al.*, 1995). The data were then binned by 0.1°-latitude intervals and rotated 42° counterclockwise to facilitate comparison with the

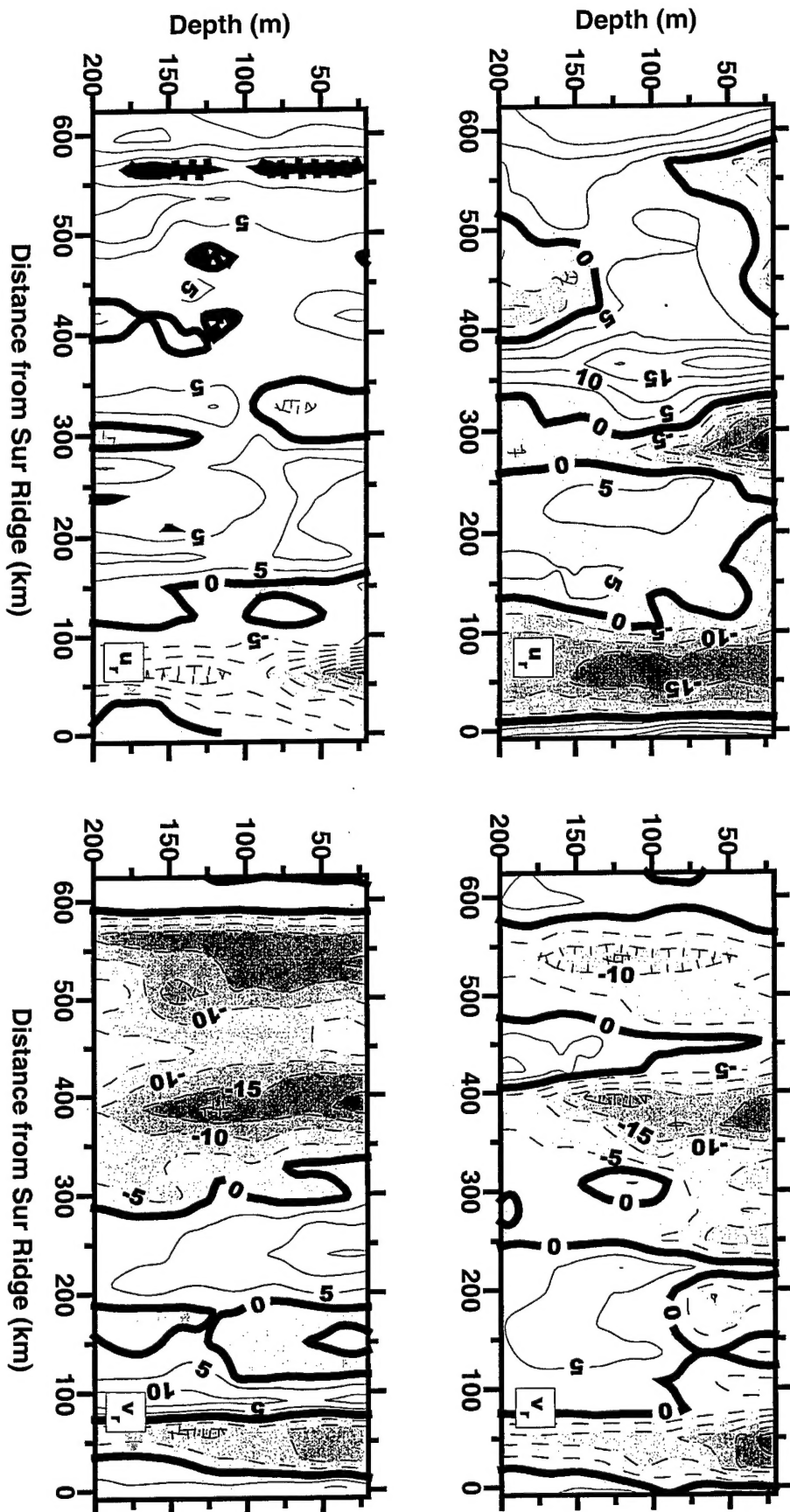


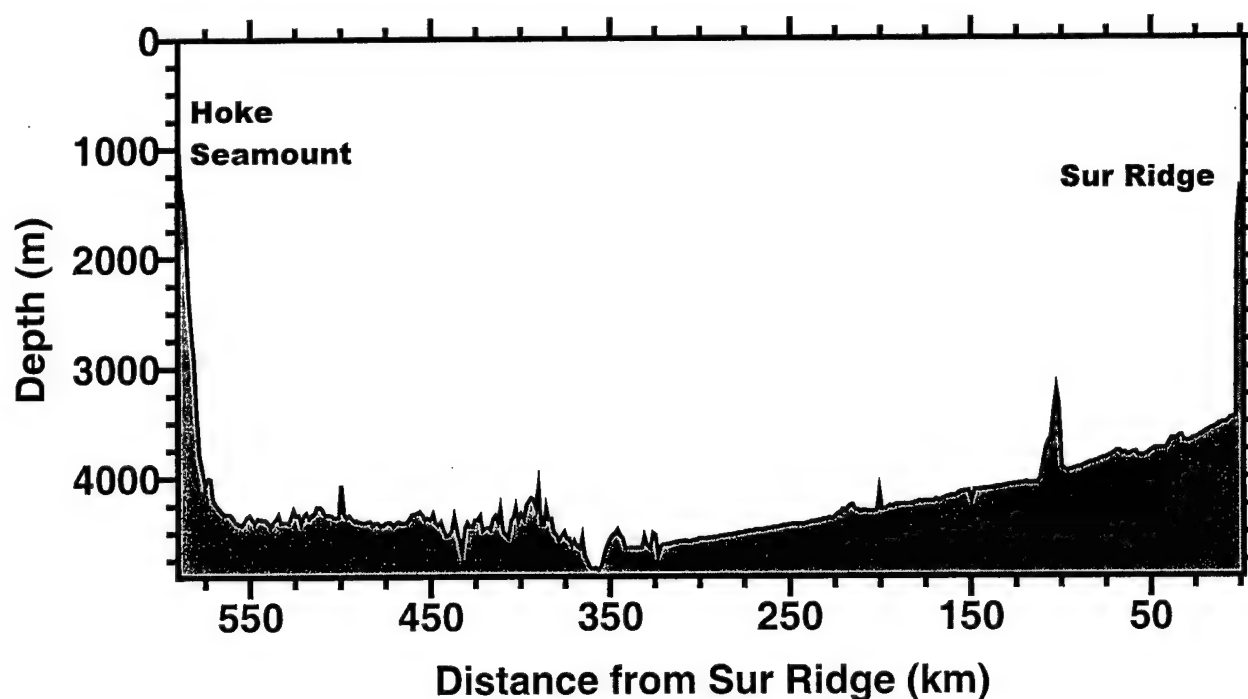
Figure 3. Along section velocities ( $u_r$ , left) and across section velocities ( $v_r$ , right), cm/s, measured by ADCP. Results are presented for the leg from Sur Ridge to Hoke Seamount (top) and return (bottom).

hydrographic data. Results from the ADCP are shown in figure 3, where the data are separated by outbound leg (to mooring deployment on Hoke Seamount) and inbound leg (returning from mooring deployment).

#### 4. Bathymetry

##### a. Sur Ridge to Hoke Seamount

Bathymetric data were collected along the hydrographic line from Sur Ridge to the Hoke Seamount as the ship steamed to the HLF-5 mooring deployment. Data were collected using a Knudsen echo sounder with a 12 kHz ship-mounted transducer. Uncorrected depth values were recorded by hand. These uncorrected depth values were then used to produce figure 4, which illustrates the bottom depth along the geodesic line between the Hoke Seamount and Sur Ridge.

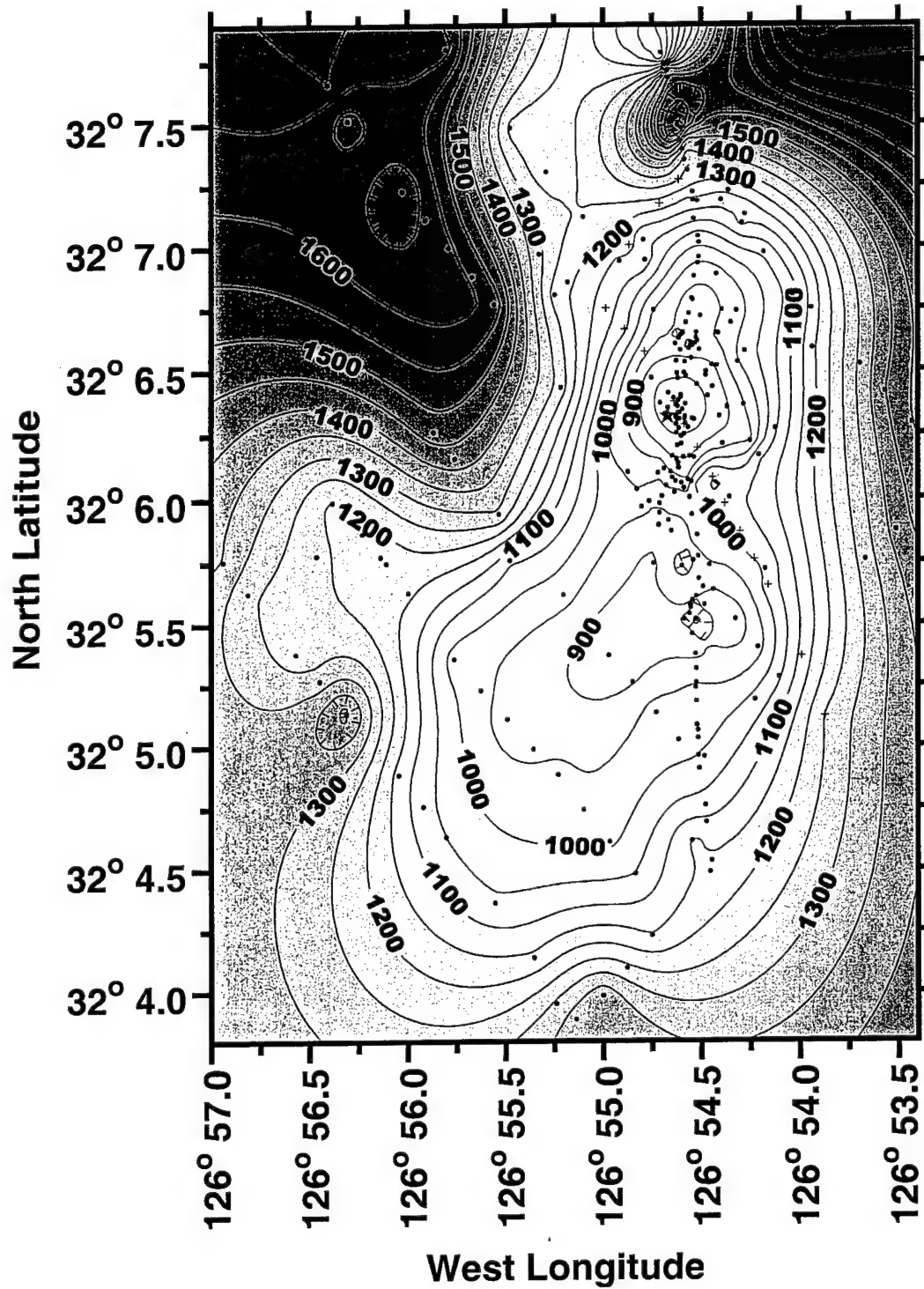


**Figure 4.** Bottom topography from Hoke Seamount to Sur Ridge.

##### b. Hoke Seamount

An extensive bathymetric survey of the Hoke Seamount was conducted prior to deploying the HLF-5 source there. As above, the data were collected using a Knudsen echo sounder with a





**Figure 5.** Bathymetry for the area near the Hoke Seamount summit. Isobaths on the chart are (uncorrected) meters. Locations of depth measurements from the 1999 survey are indicated by dots, while those from the 2000 survey are indicated by crosses. The location of the HLF-5 mooring is denoted by a star.



12 kHz ship-mounted transducer. These uncorrected depth values, augmented by another 17 depth values collected in the same manner a year later (May 2000) when the HLF-5 mooring was recovered, were used to produce a chart (figure 5) of the Hoke Seamount. The shallowest depth observed was 772 uncorrected meters.

## **5. Video Images of Hoke Seamount Summit**

For this cruise, the Monterey Bay Aquarium Research Institute (MBARI) provided a Benthic Camera System to videotape the summit area of the Hoke Seamount prior to deployment of the HLF-5 mooring. Essentially, this system is a VCR housed in a waterproof sled designed to be flown/towed just above the seafloor. Weights-- in this case, large single chain links-- are suspended from each end of the sled, both to stabilize its flight and to prevent it from getting too close to the seafloor. Still frames (figure 6) from the VCR record are shown below.

## **6. Acknowledgements**

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**Figure 6.** Still images of the summit of Hoke Seamount. The large chain links are attached to the MBARI Benthic Camera sled. The bugle-like objects in two of the frames are believed to be "goiter sponges."

## Appendix A. CTD Tables

CTD data for selected depths are listed chronologically by CTD station. Dissolved oxygen values listed herein were not calibrated with *in situ* water samples. Based on results from other cruises in this area, it is likely that the oxygen values listed here are too low. (See section 2c for further details on the properties listed in these tables.)

STATION: 1      DATE: May 3, 1999      0243 UT  
 LATITUDE: 32° 06.94 N.      LONGITUDE: 126° 54.49 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	14.8373	33.2968	24.694	323.94	0.006	0.7440	91.670	8.4381
5.0	14.8379	33.2968	24.694	324.03	0.016	0.7440	91.675	8.4166
10.0	14.8371	33.2965	24.694	324.17	0.032	0.7435	91.690	8.3773
15.0	14.7967	33.2968	24.703	323.45	0.049	0.7346	91.665	8.3611
20.0	14.7480	33.2956	24.713	322.68	0.065	0.7227	91.640	8.3515
25.0	14.7360	33.2948	24.715	322.63	0.081	0.7192	91.625	8.3355
30.0	14.7356	33.2952	24.716	322.72	0.097	0.7194	91.620	8.3130
40.0	14.7300	33.2948	24.717	322.90	0.129	0.7175	91.620	8.2928
50.0	14.4916	33.2807	24.757	319.35	0.161	0.6538	91.560	8.3095
60.0	14.0977	33.2283	24.800	315.55	0.193	0.5269	91.470	8.3549
70.0	13.9444	33.2006	24.810	314.80	0.225	0.4719	91.430	8.3673
80.0	13.8600	33.1890	24.819	314.24	0.256	0.4445	91.510	8.3478
100.0	13.8105	33.1856	24.827	314.01	0.319	0.4308	91.600	8.2911
150.0	12.5148	33.3767	25.234	276.37	0.469	0.3158	92.190	7.5637
200.0	11.0711	33.8314	25.857	218.02	0.593	0.4002	92.570	6.7909
250.0	9.1691	33.9524	26.275	178.63	0.691	0.1678	92.620	5.8301
300.0	8.3613	34.0175	26.453	162.33	0.776	0.0916	92.590	5.6879
350.0	7.3791	34.0142	26.594	149.12	0.853	-0.0561	92.590	4.8906
400.0	6.6432	34.0068	26.689	140.28	0.926	-0.1635	92.600	3.9230
450.0	6.0824	34.0223	26.775	132.39	0.994	-0.2245	92.600	3.1448
500.0	5.6496	34.0620	26.860	124.53	1.058	-0.2471	92.620	2.1507
550.0	5.1746	34.0872	26.937	117.33	1.119	-0.2837	92.630	1.5994
600.0	4.9497	34.1388	27.004	111.29	1.176	-0.2690	92.640	1.0576
650.0	5.0066	34.2144	27.058	106.89	1.230	-0.2034	92.620	0.5603
700.0	4.7928	34.2580	27.117	101.56	1.282	-0.1933	92.640	0.3938
750.0	4.5987	34.3094	27.179	95.89	1.332	-0.1745	92.650	0.2696
800.0	4.4465	34.3461	27.225	91.82	1.379	-0.1623	92.650	0.2410
1000.0	3.8762	34.4483	27.368	79.21	1.549	-0.1421	92.670	0.5213
1008.0	3.8727	34.4481	27.368	79.25	1.555	-0.1426	92.660	0.5334

STATION: 2      DATE: May 3, 1999      0812 UT  
 LATITUDE: 32° 12.98<sub>n</sub> N.      LONGITUDE: 126° 47.86 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_{\theta}$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	14.8291	33.3732	24.755	318.16	0.006	0.8025	91.660	8.3362
5.0	14.8306	33.3732	24.755	318.27	0.016	0.8028	91.675	8.3275
10.0	14.8405	33.3751	24.754	318.47	0.032	0.8062	91.670	8.3073
15.0	14.8435	33.3753	24.754	318.66	0.048	0.8069	91.680	8.3123
20.0	14.8485	33.3758	24.753	318.85	0.064	0.8082	91.690	8.2938
25.0	14.8404	33.3740	24.754	318.96	0.080	0.8048	91.685	8.2934
30.0	14.7528	33.3664	24.767	317.85	0.096	0.7794	91.690	8.3084
40.0	14.5837	33.3169	24.765	318.30	0.127	0.7028	91.660	8.3162
50.0	14.6737	33.3443	24.767	318.38	0.159	0.7439	91.670	8.2830
60.0	14.7518	33.3678	24.769	318.52	0.191	0.7793	91.660	8.2436
70.0	14.1444	33.2453	24.803	315.49	0.223	0.5501	91.560	8.3481
80.0	14.1358	33.2484	24.808	315.34	0.254	0.5504	91.560	8.3042
100.0	13.9978	33.2603	24.846	312.23	0.317	0.5297	91.450	8.2839
150.0	12.7958	33.6304	25.376	262.98	0.463	0.5725	92.230	7.5693
200.0	9.9846	33.7190	25.958	207.99	0.582	0.1194	92.560	6.1555
250.0	9.1170	33.9852	26.309	175.39	0.678	0.1853	92.570	6.0657
300.0	8.3652	34.0180	26.453	162.35	0.762	0.0926	92.540	5.2350
350.0	7.3394	34.0080	26.595	149.02	0.839	-0.0667	92.540	4.8451
400.0	6.5022	34.0128	26.713	137.95	0.911	-0.1774	92.540	3.8024
450.0	5.9629	34.0363	26.801	129.82	0.978	-0.2284	92.570	2.7982
500.0	5.3589	34.0437	26.880	122.27	1.041	-0.2962	92.590	2.1620
550.0	5.1995	34.1215	26.961	115.08	1.100	-0.2537	92.590	1.2674
600.0	5.0809	34.1892	27.029	109.14	1.156	-0.2143	92.580	0.6592
650.0	4.9324	34.2267	27.076	105.07	1.210	-0.2020	92.590	0.4651
700.0	4.8322	34.2772	27.128	100.62	1.261	-0.1738	92.600	0.3194
750.0	4.6115	34.3090	27.178	96.08	1.310	-0.1734	92.620	0.2430
800.0	4.4394	34.3543	27.233	91.13	1.357	-0.1566	92.620	0.2393
1000.0	3.8329	34.4542	27.377	78.26	1.524	-0.1417	92.630	0.5215
1010.0	3.8132	34.4559	27.380	77.99	1.532	-0.1424	92.640	0.5761

STATION: 3      DATE: May 3, 1999      1021 UT  
 LATITUDE: 32° 21.12 N.      LONGITUDE: 126° 39.70 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	14.9349	33.4359	24.780	315.73	0.006	0.8753	91.810	8.3224
5.0	14.9391	33.4366	24.780	315.85	0.016	0.8768	91.705	8.2418
10.0	14.9425	33.4361	24.779	316.09	0.032	0.8769	91.770	8.2447
15.0	14.9522	33.4380	24.779	316.29	0.047	0.8804	91.755	8.2358
20.0	14.9679	33.4435	24.780	316.34	0.063	0.8881	91.730	8.2283
25.0	14.9979	33.4594	24.786	315.93	0.079	0.9071	91.745	8.2127
30.0	15.0565	33.4849	24.793	315.41	0.095	0.9400	91.750	8.2069
40.0	15.1515	33.5323	24.809	314.19	0.126	0.9982	91.790	8.1737
50.0	15.1449	33.5339	24.812	314.21	0.158	0.9976	91.770	8.1577
60.0	15.1418	33.5334	24.812	314.45	0.189	0.9962	91.770	8.1503
70.0	15.1325	33.5320	24.814	314.64	0.221	0.9927	91.780	8.1367
80.0	15.1217	33.5292	24.814	314.89	0.252	0.9878	91.780	8.1347
100.0	15.0382	33.5161	24.823	314.65	0.315	0.9582	91.760	8.1264
150.0	13.1295	33.7327	25.389	261.83	0.460	0.7206	92.320	7.3890
200.0	10.1563	33.8994	26.070	197.48	0.575	0.2917	92.650	6.2515
250.0	9.1298	34.0201	26.334	173.01	0.666	0.2150	92.580	6.2911
300.0	8.0768	34.0170	26.495	158.15	0.749	0.0482	92.490	4.7332
350.0	7.4821	34.0234	26.587	149.89	0.825	-0.0342	92.530	4.5832
400.0	6.5927	33.9933	26.685	140.60	0.898	-0.1809	92.550	4.1366
450.0	6.0707	34.0288	26.781	131.76	0.966	-0.2208	92.570	2.9463
500.0	5.5127	34.0584	26.874	123.08	1.030	-0.2664	92.570	2.0476
550.0	5.1530	34.0890	26.940	116.93	1.090	-0.2848	92.590	1.4814
600.0	4.9015	34.1457	27.015	110.20	1.147	-0.2690	92.590	0.9419
650.0	4.8004	34.2097	27.077	104.73	1.200	-0.2301	92.600	0.5186
700.0	4.7401	34.2743	27.136	99.71	1.251	-0.1863	92.590	0.3061
750.0	4.6912	34.3250	27.182	95.86	1.300	-0.1521	92.590	0.2382
800.0	4.4614	34.3489	27.226	91.79	1.347	-0.1585	92.620	0.2222
1000.0	3.8831	34.4495	27.368	79.21	1.517	-0.1405	92.620	0.4732
1008.0	3.8622	34.4517	27.372	78.86	1.524	-0.1409	92.630	0.5083

STATION: 4 DATE: May 3, 1999 1231 UT  
 LATITUDE: 32° 29.04 N. LONGITUDE: 126° 31.51 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	14.3984	33.2691	24.766	317.06	0.006	0.6259	91.580	8.4238
5.0	14.3980	33.2690	24.767	317.15	0.016	0.6256	91.585	8.4151
10.0	14.3989	33.2689	24.766	317.30	0.032	0.6256	91.650	8.4007
15.0	14.4013	33.2688	24.766	317.48	0.048	0.6259	91.640	8.4022
20.0	14.4020	33.2688	24.766	317.63	0.063	0.6258	91.610	8.3853
25.0	14.4020	33.2691	24.766	317.74	0.079	0.6259	91.655	8.3853
30.0	14.4041	33.2690	24.766	317.92	0.095	0.6261	91.630	8.3720
40.0	14.4128	33.2847	24.777	317.20	0.127	0.6401	91.610	8.3424
50.0	14.4088	33.2850	24.778	317.36	0.159	0.6392	91.590	8.3284
60.0	14.4196	33.2882	24.778	317.60	0.190	0.6438	91.590	8.3021
70.0	14.4524	33.2985	24.780	317.77	0.222	0.6587	91.570	8.2840
80.0	14.5428	33.3306	24.786	317.51	0.254	0.7035	91.570	8.2462
100.0	14.9288	33.5362	24.862	310.90	0.317	0.9497	91.530	8.1156
150.0	12.4480	33.4331	25.291	270.98	0.465	0.3473	92.180	7.4443
200.0	10.6492	33.7803	25.892	214.53	0.585	0.2838	92.500	6.3043
250.0	9.1588	33.9874	26.304	175.88	0.681	0.1938	92.540	6.1052
300.0	8.1732	34.0154	26.479	159.68	0.765	0.0614	92.500	4.8517
350.0	7.1424	33.9983	26.615	146.99	0.841	-0.1019	92.540	4.6959
400.0	6.6178	34.0237	26.706	138.68	0.913	-0.1535	92.490	3.5298
450.0	5.8506	34.0333	26.812	128.61	0.980	-0.2447	92.520	2.5448
500.0	5.6225	34.0866	26.883	122.36	1.043	-0.2309	92.520	1.8027
550.0	5.4619	34.1713	26.970	114.63	1.102	-0.1837	92.500	0.9106
600.0	5.1108	34.1963	27.031	108.98	1.158	-0.2053	92.520	0.6063
650.0	4.9630	34.2438	27.086	104.17	1.212	-0.1851	92.530	0.3943
700.0	4.5742	34.2609	27.143	98.72	1.262	-0.2149	92.560	0.2612
750.0	4.4732	34.3092	27.193	94.40	1.311	-0.1881	92.590	0.1947
800.0	4.2932	34.3369	27.234	90.67	1.357	-0.1857	92.580	0.1632
1000.0	3.8578	34.4444	27.366	79.28	1.527	-0.1470	92.590	0.4567
1010.0	3.8310	34.4452	27.370	78.99	1.534	-0.1490	92.590	0.4740

STATION: 5 DATE: May 3, 1999 1434 UT  
 LATITUDE: 32° 37.13 N. LONGITUDE: 126° 23.40 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_0$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	14.4302	33.2765	24.765	317.16	0.006	0.6386	91.650	8.6477
5.0	14.4270	33.2780	24.767	317.07	0.016	0.6390	91.630	8.5113
10.0	14.4286	33.2780	24.767	317.23	0.032	0.6392	91.640	8.5180
15.0	14.4299	33.2775	24.767	317.42	0.048	0.6390	91.650	8.5096
20.0	14.4308	33.2776	24.767	317.56	0.063	0.6391	91.650	8.4682
25.0	14.4309	33.2775	24.767	317.71	0.079	0.6388	91.640	8.4569
30.0	14.4325	33.2778	24.767	317.84	0.095	0.6393	91.650	8.4250
40.0	14.4345	33.2776	24.767	318.16	0.127	0.6392	91.650	8.4035
50.0	14.4287	33.2774	24.768	318.32	0.159	0.6375	91.640	8.3758
60.0	14.4276	33.2769	24.768	318.59	0.191	0.6366	91.630	8.3546
70.0	14.4151	33.2768	24.771	318.61	0.223	0.6335	91.610	8.3282
80.0	14.3812	33.2758	24.778	318.26	0.254	0.6250	91.650	8.3160
100.0	14.1665	33.3408	24.873	309.69	0.317	0.6295	91.250	8.2676
150.0	12.5829	33.5200	25.332	267.10	0.465	0.4428	92.180	7.3121
200.0	9.7550	33.7469	26.018	202.20	0.582	0.1026	92.430	5.7971
250.0	8.8987	34.0141	26.366	169.86	0.673	0.1733	92.470	5.7560
300.0	7.9283	34.0346	26.531	154.67	0.754	0.0401	92.430	4.4840
350.0	7.3554	34.0470	26.623	146.35	0.830	-0.0335	92.440	3.7850
400.0	6.8367	34.0927	26.731	136.51	0.901	-0.0696	92.420	2.5951
450.0	5.9507	34.0584	26.820	128.02	0.966	-0.2124	92.470	2.2618
500.0	5.6794	34.1132	26.897	121.10	1.028	-0.2030	92.450	1.4578
550.0	5.4287	34.1385	26.947	116.65	1.088	-0.2135	92.450	1.0885
600.0	5.2086	34.1824	27.009	111.22	1.145	-0.2051	92.470	0.7424
650.0	4.8946	34.2182	27.073	105.24	1.199	-0.2130	92.490	0.4877
700.0	4.6807	34.2515	27.124	100.69	1.250	-0.2108	92.520	0.3691
750.0	4.6380	34.3153	27.180	95.93	1.299	-0.1656	92.470	0.1821
800.0	4.4720	34.3464	27.223	92.11	1.346	-0.1594	92.500	0.1883
1000.0	3.7892	34.4421	27.371	78.64	1.517	-0.1555	92.540	0.4135
1200.0	3.2935	34.5057	27.471	69.63	1.664	-0.1540	92.550	0.8363
1400.0	2.9251	34.5432	27.536	63.86	1.798	-0.1589	92.570	1.2489
1600.0	2.6463	34.5701	27.583	59.75	1.921	-0.1629	92.570	1.5624
1800.0	2.3600	34.5923	27.626	55.72	2.036	-0.1700	92.580	1.8850
2000.0	2.1107	34.6135	27.664	52.05	2.144	-0.1740	92.570	2.2636
2200.0	1.9465	34.6282	27.690	49.76	2.245	-0.1761	92.570	2.5852
2400.0	1.8360	34.6399	27.709	48.26	2.343	-0.1762	92.570	2.8733
2600.0	1.7397	34.6499	27.725	46.98	2.438	-0.1765	92.570	3.1635
2800.0	1.6577	34.6578	27.739	45.96	2.531	-0.1774	92.570	3.4380
3000.0	1.6045	34.6631	27.748	45.47	2.623	-0.1782	92.570	3.6304
3200.0	1.5597	34.6681	27.757	45.07	2.713	-0.1786	92.550	3.8226
3400.0	1.5171	34.6739	27.766	44.60	2.803	-0.1783	92.540	4.0633
3600.0	1.4949	34.6780	27.772	44.53	2.892	-0.1779	92.540	4.2835
3800.0	1.4824	34.6814	27.777	44.63	2.981	-0.1775	92.520	4.4900
4000.0	1.4877	34.6836	27.780	45.08	3.071	-0.1769	92.520	4.6144
4200.0	1.5000	34.6847	27.781	45.72	3.162	-0.1767	92.480	4.6948
4314.0	1.5101	34.6855	27.782	46.12	3.214	-0.1762	92.450	4.7261

STATION: 6 DATE: May 3, 1999 1827 UT  
 LATITUDE: 32° 45.27 N. LONGITUDE: 126° 15.23 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_{\theta}$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	14.5170	33.2736	24.745	319.12	0.006	0.6553	91.700	9.3460
5.0	14.5173	33.2719	24.744	319.34	0.016	0.6538	91.300	9.1987
10.0	14.4943	33.2719	24.749	319.00	0.032	0.6487	91.450	9.1736
15.0	14.4640	33.2719	24.755	318.52	0.048	0.6420	91.440	9.1510
20.0	14.4288	33.2716	24.763	317.96	0.064	0.6339	91.390	9.1208
25.0	14.4136	33.2710	24.765	317.83	0.080	0.6300	91.375	9.0907
30.0	14.4066	33.2706	24.767	317.85	0.096	0.6280	91.380	9.0638
40.0	14.3842	33.2683	24.770	317.83	0.127	0.6210	91.400	8.9733
50.0	14.3754	33.2671	24.771	318.00	0.159	0.6178	91.410	8.9043
60.0	14.3577	33.2655	24.774	318.02	0.191	0.6124	91.370	8.8304
70.0	14.3247	33.2637	24.780	317.75	0.223	0.6035	91.380	8.7732
80.0	13.6829	33.2480	24.901	306.42	0.254	0.4539	90.630	8.8434
100.0	14.4117	33.5881	25.013	296.49	0.314	0.8774	91.170	8.3889
150.0	10.7380	33.5884	25.726	229.17	0.449	0.1486	92.280	6.5716
200.0	9.1294	33.8965	26.237	181.22	0.549	0.1180	92.350	5.7352
250.0	8.2456	34.0064	26.461	160.58	0.634	0.0660	92.330	4.9142
300.0	7.5896	34.0457	26.588	148.98	0.711	-0.0005	92.330	3.7708
350.0	6.9774	34.0544	26.681	140.56	0.784	-0.0802	92.340	3.2118
400.0	6.4727	34.0731	26.764	133.08	0.852	-0.1335	92.350	2.4640
450.0	6.0275	34.0968	26.840	126.15	0.917	-0.1724	92.350	1.7682
500.0	5.6810	34.1252	26.906	120.23	0.978	-0.1933	92.400	1.4057
550.0	5.4673	34.1799	26.976	114.06	1.037	-0.1762	92.370	0.7901
600.0	5.2437	34.2295	27.042	108.15	1.092	-0.1638	92.380	0.4807
650.0	4.9125	34.2556	27.101	102.68	1.145	-0.1814	92.420	0.3253
700.0	4.5786	34.2731	27.152	97.86	1.195	-0.2048	92.470	0.2572
750.0	4.4503	34.3055	27.192	94.41	1.243	-0.1934	92.460	0.1988
800.0	4.3054	34.3538	27.247	89.56	1.289	-0.1711	92.460	0.1899
1000.0	3.7551	34.4486	27.380	77.76	1.456	-0.1537	92.460	0.4358
1010.0	3.7430	34.4502	27.382	77.58	1.463	-0.1537	92.470	0.4579



STATION: 7 DATE: May 3, 1999 2031 UT  
 LATITUDE: 32° 53.21 N. LONGITUDE: 126° 06.95 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	14.1522	33.2112	24.773	316.40	0.006	0.5268	90.780	8.8065
5.0	14.1716	33.2099	24.768	316.96	0.016	0.5299	90.660	8.8078
10.0	14.1736	33.2115	24.769	317.01	0.032	0.5314	90.800	8.8061
15.0	14.1342	33.2114	24.778	316.36	0.048	0.5228	90.730	8.8239
20.0	14.0912	33.2109	24.786	315.67	0.063	0.5130	90.640	8.8079
25.0	14.0609	33.2104	24.793	315.23	0.079	0.5060	90.570	8.8057
30.0	14.0554	33.2098	24.793	315.30	0.095	0.5041	90.520	8.7914
40.0	14.0390	33.2095	24.797	315.25	0.126	0.5001	90.500	8.7648
50.0	14.0206	33.2090	24.800	315.18	0.158	0.4954	90.470	8.7567
60.0	14.0038	33.2084	24.804	315.15	0.189	0.4911	90.510	8.7563
70.0	13.9701	33.2060	24.809	314.91	0.221	0.4817	90.610	8.7281
80.0	13.6190	33.2370	24.905	305.99	0.252	0.4318	90.530	8.7272
100.0	13.6292	33.2620	24.923	304.84	0.313	0.4532	90.580	8.6190
150.0	10.8195	33.5469	25.679	233.61	0.450	0.1303	92.110	6.3081
200.0	9.2195	33.8520	26.188	185.92	0.553	0.0974	92.300	5.5904
250.0	8.3199	33.9919	26.438	162.75	0.639	0.0658	92.260	4.8696
300.0	7.5379	34.0363	26.588	148.94	0.716	-0.0153	92.270	3.8909
350.0	6.7322	34.0345	26.699	138.72	0.788	-0.1291	92.270	3.2953
400.0	6.3516	34.0596	26.769	132.48	0.856	-0.1600	92.280	2.4985
450.0	5.9333	34.0744	26.834	126.60	0.921	-0.2019	92.300	1.9774
500.0	5.4057	34.0841	26.907	119.84	0.982	-0.2587	92.350	1.6495
550.0	5.3201	34.1618	26.979	113.57	1.041	-0.2079	92.310	0.8270
600.0	5.0686	34.2165	27.052	106.96	1.095	-0.1942	92.350	0.4825
650.0	4.6996	34.2416	27.114	101.15	1.147	-0.2160	92.370	0.3341
700.0	4.6443	34.3004	27.167	96.62	1.197	-0.1762	92.350	0.2121
750.0	4.4847	34.3381	27.214	92.40	1.244	-0.1641	92.360	0.1691
800.0	4.3299	34.3776	27.263	88.09	1.289	-0.1498	92.350	0.1747
1000.0	3.7580	34.4551	27.385	77.31	1.454	-0.1483	92.340	0.4076
1010.0	3.7275	34.4575	27.390	76.86	1.462	-0.1495	92.350	0.4293

STATION: 8 DATE: May 3, 1999 2236 UT  
 LATITUDE: 33° 01.20 N. LONGITUDE: 125° 58.67 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	14.1893	33.1875	24.747	318.88	0.006	0.5160	90.610	8.7446
5.0	14.1833	33.1866	24.748	318.90	0.016	0.5139	90.735	8.7477
10.0	14.1706	33.1873	24.751	318.73	0.032	0.5116	90.720	8.7716
15.0	14.1279	33.1870	24.760	318.03	0.048	0.5021	90.700	8.7740
20.0	14.1110	33.1872	24.764	317.81	0.064	0.4984	90.700	8.7768
25.0	14.0527	33.1878	24.777	316.74	0.080	0.4862	90.650	8.7474
30.0	14.0272	33.1868	24.781	316.43	0.095	0.4799	90.630	8.7108
40.0	14.0185	33.1868	24.783	316.52	0.127	0.4777	90.610	8.6985
50.0	14.0128	33.1870	24.785	316.64	0.159	0.4763	90.630	8.6831
60.0	14.0029	33.1872	24.788	316.69	0.190	0.4741	90.640	8.6734
70.0	13.9622	33.1878	24.797	316.09	0.222	0.4656	90.760	8.6680
80.0	13.6129	33.2087	24.885	307.95	0.253	0.4081	90.550	8.6977
100.0	13.5155	33.2076	24.904	306.63	0.315	0.3863	90.360	8.6003
150.0	11.2004	33.5237	25.593	241.88	0.451	0.1813	92.060	6.6918
200.0	9.3995	33.8463	26.154	189.17	0.558	0.1222	92.250	5.7810
250.0	8.5175	33.9787	26.398	166.68	0.645	0.0856	92.210	4.9227
300.0	7.7218	34.0148	26.545	153.16	0.725	-0.0058	92.190	4.3294
350.0	7.1511	34.0276	26.636	144.94	0.800	-0.0775	92.210	3.7980
400.0	6.4081	34.0158	26.727	136.48	0.870	-0.1873	92.250	3.4082
450.0	5.9473	34.0499	26.813	128.60	0.936	-0.2196	92.260	2.4467
500.0	5.4959	34.0826	26.895	121.07	0.999	-0.2492	92.280	1.8313
550.0	5.0644	34.1135	26.970	114.04	1.058	-0.2755	92.300	1.2229
600.0	5.0698	34.2138	27.049	107.18	1.113	-0.1962	92.270	0.5580
650.0	4.9173	34.2586	27.103	102.52	1.165	-0.1785	92.260	0.3101
700.0	4.7044	34.2928	27.154	97.91	1.215	-0.1756	92.280	0.2260
750.0	4.6507	34.3376	27.196	94.43	1.264	-0.1466	92.240	0.1672
800.0	4.4209	34.3564	27.236	90.75	1.310	-0.1569	92.250	0.1559
1000.0	3.7773	34.4528	27.381	77.71	1.477	-0.1483	92.280	0.3937
1012.0	3.7381	34.4556	27.387	77.14	1.486	-0.1500	92.280	0.4128

STATION: 9                      DATE: May 4, 1999                      0044 UT  
 LATITUDE: 33° 09.21 N.                      LONGITUDE: 125° 50.43 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_s$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	14.3303	33.2432	24.761	317.60	0.006	0.5906	90.770	8.5304
5.0	14.3282	33.2430	24.761	317.65	0.016	0.5899	90.805	8.5114
10.0	14.3272	33.2428	24.761	317.78	0.032	0.5894	90.870	8.4744
15.0	14.3139	33.2423	24.764	317.68	0.048	0.5859	90.870	8.4610
20.0	14.2678	33.2400	24.772	317.05	0.064	0.5740	90.880	8.4584
25.0	14.2260	33.2388	24.780	316.44	0.079	0.5638	90.830	8.4433
30.0	14.1656	33.2375	24.792	315.45	0.095	0.5497	90.800	8.4313
40.0	14.1563	33.2396	24.796	315.37	0.127	0.5491	90.700	8.4063
50.0	14.1524	33.2396	24.797	315.55	0.158	0.5479	90.640	8.3788
60.0	14.1486	33.2399	24.798	315.71	0.190	0.5470	90.720	8.3553
70.0	14.1462	33.2428	24.801	315.71	0.221	0.5485	90.770	8.3251
80.0	13.6343	33.1710	24.851	311.13	0.253	0.3827	90.530	8.3995
100.0	13.4378	33.1444	24.871	309.77	0.315	0.3199	90.140	8.3593
150.0	11.0972	33.5341	25.620	239.33	0.453	0.1706	91.930	6.7491
200.0	9.0771	33.8833	26.235	181.39	0.555	0.0991	92.200	5.2474
250.0	8.3299	33.9881	26.434	163.18	0.641	0.0643	92.150	4.7312
300.0	7.7554	34.0094	26.536	154.04	0.720	-0.0052	92.130	4.4060
350.0	6.8703	34.0129	26.663	142.18	0.794	-0.1276	92.160	3.8909
400.0	6.1351	34.0280	26.772	132.02	0.862	-0.2127	92.190	2.9434
450.0	5.7811	34.0776	26.856	124.43	0.927	-0.2182	92.200	1.9499
500.0	5.3883	34.1041	26.925	118.14	0.988	-0.2450	92.200	1.3981
550.0	4.9411	34.1136	26.984	112.55	1.045	-0.2894	92.250	1.2104
600.0	4.8969	34.1937	27.053	106.57	1.100	-0.2316	92.230	0.6124
650.0	4.8285	34.2613	27.115	101.24	1.152	-0.1863	92.210	0.3167
700.0	4.6660	34.3199	27.180	95.43	1.201	-0.1584	92.200	0.1883
750.0	4.5187	34.3596	27.228	91.21	1.248	-0.1435	92.180	0.1716
800.0	4.3637	34.3792	27.261	88.37	1.293	-0.1450	92.200	0.1785
1000.0	3.7530	34.4583	27.388	77.02	1.457	-0.1463	92.210	0.4337
1200.0	3.2637	34.5109	27.478	68.90	1.603	-0.1527	91.710	0.8179
1400.0	2.8791	34.5454	27.542	63.16	1.735	-0.1611	92.230	1.1507
1600.0	2.5161	34.5719	27.596	58.07	1.856	-0.1721	92.230	1.5091
1800.0	2.2250	34.5961	27.640	53.82	1.967	-0.1776	92.230	1.8886
2000.0	2.0196	34.6195	27.676	50.50	2.071	-0.1762	92.230	2.3607
2200.0	1.8718	34.6328	27.699	48.49	2.170	-0.1779	92.250	2.6489
2400.0	1.7746	34.6422	27.715	47.30	2.266	-0.1788	92.280	2.9046
2600.0	1.6877	34.6539	27.732	46.00	2.359	-0.1770	92.280	3.2675
2800.0	1.6268	34.6602	27.743	45.37	2.450	-0.1776	92.280	3.4779
3000.0	1.5823	34.6650	27.751	45.02	2.541	-0.1782	92.270	3.6504
3200.0	1.5317	34.6706	27.761	44.49	2.630	-0.1785	92.260	3.8739
3400.0	1.5004	34.6752	27.768	44.26	2.719	-0.1784	92.250	4.1077
3600.0	1.4883	34.6787	27.773	44.38	2.808	-0.1778	92.250	4.2876
3800.0	1.4828	34.6816	27.777	44.62	2.897	-0.1773	92.250	4.4458
4000.0	1.4892	34.6834	27.779	45.11	2.986	-0.1769	92.230	4.5510
4200.0	1.5027	34.6845	27.781	45.77	3.077	-0.1766	92.210	4.6262
4400.0	1.5210	34.6852	27.782	46.54	3.169	-0.1764	92.180	4.6926
4498.0	1.5304	34.6855	27.782	46.93	3.215	-0.1763	92.160	4.6741

STATION: 10      DATE: May 4, 1999      0646 UT  
 LATITUDE: 33° 17.30 N.      LONGITUDE: 125° 42.29 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	14.2625	33.2583	24.787	315.14	0.006	0.5879	90.830	8.4001
5.0	14.2627	33.2584	24.787	315.21	0.016	0.5879	90.820	8.3893
10.0	14.2625	33.2576	24.786	315.39	0.032	0.5871	90.770	8.3773
15.0	14.2729	33.2633	24.789	315.32	0.047	0.5936	90.740	8.3701
20.0	14.2875	33.2861	24.803	314.06	0.063	0.6147	90.840	8.3542
25.0	14.2618	33.3144	24.831	311.60	0.079	0.6314	90.780	8.3377
30.0	14.2472	33.3137	24.834	311.49	0.094	0.6276	90.770	8.3200
40.0	14.2350	33.3130	24.836	311.55	0.125	0.6241	90.710	8.2817
50.0	14.2148	33.3119	24.840	311.49	0.157	0.6185	90.650	8.2610
60.0	14.2047	33.3116	24.842	311.57	0.188	0.6158	90.660	8.2263
70.0	14.1955	33.3103	24.843	311.73	0.219	0.6125	90.730	8.1982
80.0	14.1860	33.3085	24.844	311.93	0.250	0.6087	90.780	8.1776
100.0	14.0508	33.3114	24.875	309.53	0.312	0.5815	90.910	8.1507
150.0	10.4809	33.6218	25.797	222.37	0.443	0.1294	91.950	6.2075
200.0	8.8171	33.9313	26.313	173.84	0.540	0.0957	92.050	5.0849
250.0	8.0751	34.0075	26.487	157.99	0.623	0.0412	91.990	4.6058
300.0	7.3555	34.0203	26.602	147.57	0.699	-0.0540	91.990	4.1876
350.0	6.7087	34.0245	26.694	139.14	0.771	-0.1402	91.990	3.5954
400.0	6.0831	34.0373	26.786	130.65	0.839	-0.2119	92.030	2.6563
450.0	5.6031	34.0524	26.857	124.07	0.903	-0.2597	92.050	2.1275
500.0	5.3130	34.0863	26.919	118.54	0.964	-0.2679	92.040	1.5715
550.0	4.9964	34.1230	26.985	112.51	1.022	-0.2757	92.070	1.1192
600.0	4.8460	34.1811	27.049	106.90	1.077	-0.2472	92.070	0.6321
650.0	4.7485	34.2451	27.111	101.48	1.128	-0.2079	92.070	0.3492
700.0	4.6117	34.2953	27.166	96.61	1.178	-0.1837	92.040	0.1995
750.0	4.5721	34.3422	27.208	93.14	1.225	-0.1515	92.010	0.1519
800.0	4.4236	34.3703	27.247	89.75	1.271	-0.1457	92.010	0.1616
1000.0	3.8736	34.4478	27.367	79.22	1.440	-0.1427	92.030	0.3691
1010.0	3.8464	34.4518	27.373	78.68	1.448	-0.1423	92.020	0.3923

STATION: 11      DATE: May 4, 1999      0908 UT  
 LATITUDE: 33° 25.10 N.      LONGITUDE: 125° 33.84 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	14.1188	33.2243	24.790	314.77	0.006	0.5300	90.530	8.5046
5.0	14.1231	33.2257	24.791	314.84	0.016	0.5320	90.570	8.3969
10.0	14.1233	33.2255	24.791	314.98	0.031	0.5317	90.570	8.4477
15.0	14.1236	33.2261	24.791	315.08	0.047	0.5321	90.560	8.5219
20.0	14.1238	33.2261	24.791	315.20	0.063	0.5320	90.570	8.5155
25.0	14.1203	33.2265	24.793	315.23	0.079	0.5314	90.535	8.4720
30.0	14.1143	33.2290	24.796	315.06	0.095	0.5319	90.550	8.4385
40.0	14.0881	33.2355	24.807	314.32	0.126	0.5312	90.520	8.3501
50.0	14.0351	33.2375	24.819	313.37	0.157	0.5211	90.410	8.3292
60.0	14.0251	33.2366	24.821	313.50	0.189	0.5180	90.440	8.3131
70.0	13.9539	33.2407	24.839	312.04	0.220	0.5057	90.430	8.2995
80.0	13.9664	33.2491	24.844	311.92	0.251	0.5148	90.520	8.2734
100.0	13.4914	33.2188	24.918	305.34	0.313	0.3902	90.280	8.2879
150.0	10.4687	33.6200	25.797	222.30	0.445	0.1259	91.870	6.1590
200.0	9.0420	33.8901	26.246	180.35	0.542	0.0989	91.980	5.1558
250.0	8.4058	34.0135	26.442	162.43	0.627	0.0960	91.910	4.7330
300.0	7.5756	34.0225	26.572	150.50	0.705	-0.0209	91.910	4.1899
350.0	6.9047	34.0367	26.677	140.88	0.778	-0.1041	91.900	3.3140
400.0	6.2441	34.0284	26.758	133.40	0.847	-0.1985	91.940	2.8495
450.0	5.8272	34.0569	26.834	126.55	0.912	-0.2289	91.970	2.2153
500.0	5.4214	34.0727	26.896	120.89	0.974	-0.2659	91.990	1.7143
550.0	5.0970	34.1099	26.963	114.70	1.033	-0.2747	92.000	1.2961
600.0	5.1751	34.2221	27.044	107.85	1.088	-0.1776	91.940	0.5187
650.0	4.9720	34.2796	27.113	101.63	1.141	-0.1558	91.930	0.2699
700.0	4.7380	34.3261	27.177	95.84	1.190	-0.1457	91.940	0.1854
750.0	4.5884	34.3529	27.215	92.54	1.237	-0.1413	91.940	0.1630
800.0	4.4029	34.3848	27.261	88.43	1.282	-0.1365	91.920	0.1905
1000.0	3.7876	34.4550	27.382	77.67	1.446	-0.1455	91.980	0.4460
1008.0	3.7668	34.4576	27.386	77.30	1.453	-0.1456	91.990	0.4654

STATION: 12      DATE: May 4, 1999      1117 UT  
 LATITUDE: 33° 33.16 N.      LONGITUDE: 125° 25.42 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_{\theta}$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	13.0520	33.0305	24.857	308.42	0.006	0.1525	90.350	8.7721
5.0	13.0972	33.0405	24.856	308.60	0.015	0.1697	90.345	8.6925
10.0	13.0894	33.0385	24.856	308.72	0.031	0.1663	90.330	8.6943
15.0	13.1954	33.0654	24.856	308.87	0.046	0.2094	90.345	8.6578
20.0	13.3850	33.1139	24.856	309.04	0.062	0.2870	90.390	8.5949
25.0	13.6296	33.1837	24.860	308.75	0.077	0.3933	90.390	8.5149
30.0	13.5521	33.1724	24.868	308.20	0.093	0.3680	90.280	8.5114
40.0	12.6207	32.9579	24.886	306.62	0.123	0.0064	90.140	8.7675
50.0	12.3397	32.9030	24.898	305.74	0.154	-0.0936	90.440	8.8476
60.0	12.0502	32.8725	24.929	302.98	0.184	-0.1750	89.900	8.8731
70.0	12.1115	32.9548	24.982	298.24	0.214	-0.0974	90.120	8.8552
80.0	11.9690	32.9967	25.041	292.81	0.244	-0.0918	90.120	8.8764
100.0	11.3679	33.1817	25.296	268.97	0.301	-0.0587	91.380	7.8812
150.0	9.8118	33.7745	26.029	200.10	0.415	0.1350	91.860	5.5809
200.0	8.7362	33.9616	26.350	170.37	0.507	0.1070	91.860	5.1945
250.0	7.9775	34.0147	26.507	156.04	0.589	0.0324	91.840	4.4583
300.0	7.2480	34.0327	26.626	145.15	0.664	-0.0592	91.840	3.7275
350.0	6.5382	34.0257	26.718	136.79	0.734	-0.1618	91.840	3.0791
400.0	5.9616	34.0438	26.806	128.62	0.800	-0.2220	91.870	2.3249
450.0	5.5982	34.0991	26.895	120.54	0.863	-0.2234	91.870	1.4467
500.0	5.4006	34.1758	26.980	112.96	0.921	-0.1868	91.870	0.8362
550.0	5.1733	34.2127	27.036	107.98	0.976	-0.1847	91.870	0.5135
600.0	4.9819	34.2617	27.097	102.55	1.029	-0.1684	91.870	0.3094
650.0	4.8204	34.3008	27.147	98.21	1.079	-0.1561	91.870	0.2141
700.0	4.7045	34.3400	27.192	94.40	1.127	-0.1384	91.850	0.1737
750.0	4.4194	34.3546	27.235	90.39	1.173	-0.1580	91.900	0.1489
800.0	4.2267	34.3774	27.274	86.88	1.218	-0.1607	91.940	0.1662
1000.0	3.7302	34.4587	27.390	76.72	1.381	-0.1482	91.940	0.4412
1010.0	3.7022	34.4623	27.396	76.21	1.389	-0.1482	91.940	0.4708

STATION: 13      DATE: May 4, 1999      1316 UT  
 LATITUDE: 33° 41.09<sub>N</sub>.      LONGITUDE: 125° 17.00 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_{\theta}$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.0716	32.8430	24.901	304.26	0.006	-0.1930	90.670	8.8957
5.0	12.0764	32.8433	24.900	304.39	0.015	-0.1919	90.700	8.7850
10.0	12.0785	32.8433	24.900	304.54	0.030	-0.1916	90.720	8.8128
15.0	12.0673	32.8433	24.902	304.45	0.046	-0.1939	90.660	8.8538
20.0	12.0526	32.8429	24.905	304.33	0.061	-0.1972	90.670	8.9207
25.0	11.9385	32.8507	24.932	301.82	0.076	-0.2132	90.760	9.0022
30.0	11.9139	32.8549	24.940	301.19	0.091	-0.2147	90.770	9.0434
40.0	11.8684	32.8828	24.971	298.54	0.121	-0.2014	90.690	9.1247
50.0	11.8158	32.9036	24.997	296.29	0.151	-0.1951	90.760	8.9965
60.0	11.9239	32.9480	25.011	295.15	0.180	-0.1390	90.360	8.7621
70.0	12.0326	32.9859	25.021	294.52	0.210	-0.0879	90.100	8.6328
80.0	12.1660	33.1233	25.102	287.02	0.239	0.0475	89.720	8.6051
100.0	11.1416	33.0584	25.241	274.16	0.295	-0.1992	91.160	7.9293
150.0	9.5247	33.7413	26.051	197.98	0.412	0.0606	91.550	5.1222
200.0	8.6357	33.9790	26.379	167.56	0.502	0.1050	91.620	5.1426
250.0	7.9508	34.0251	26.519	154.88	0.583	0.0367	91.730	4.3123
300.0	7.0571	34.0135	26.638	143.96	0.657	-0.1010	91.760	3.7406
350.0	6.5081	34.0408	26.733	135.27	0.727	-0.1538	91.760	2.9096
400.0	6.1251	34.0798	26.814	128.03	0.793	-0.1730	91.760	1.8686
450.0	5.7213	34.1166	26.894	120.78	0.855	-0.1946	91.770	1.3198
500.0	5.3720	34.1643	26.974	113.46	0.914	-0.1993	91.800	0.8173
550.0	5.1826	34.2238	27.044	107.27	0.969	-0.1749	91.800	0.4640
600.0	4.9372	34.2588	27.100	102.22	1.021	-0.1757	91.810	0.3154
650.0	4.7510	34.2967	27.152	97.68	1.071	-0.1670	91.820	0.1957
700.0	4.5428	34.3258	27.198	93.52	1.119	-0.1671	91.820	0.1503
750.0	4.3280	34.3638	27.252	88.63	1.164	-0.1604	91.850	0.1400
800.0	4.1829	34.4012	27.297	84.60	1.208	-0.1465	91.840	0.1856
1000.0	3.6957	34.4769	27.408	74.97	1.367	-0.1373	91.820	0.5291
1200.0	3.2484	34.5213	27.488	67.95	1.509	-0.1459	91.820	0.8760
1400.0	2.8475	34.5558	27.553	62.02	1.639	-0.1557	91.820	1.2415
1600.0	2.6014	34.5755	27.591	58.82	1.760	-0.1623	91.830	1.5032
1800.0	2.2956	34.5999	27.637	54.39	1.873	-0.1691	91.850	1.9159
2000.0	2.0970	34.6203	27.671	51.39	1.979	-0.1697	91.850	2.3002
2200.0	1.9361	34.6305	27.692	49.46	2.079	-0.1750	91.870	2.5272
2400.0	1.8154	34.6408	27.711	47.93	2.176	-0.1770	91.870	2.7824
2600.0	1.7272	34.6501	27.726	46.80	2.271	-0.1772	91.870	3.0484
2800.0	1.6565	34.6576	27.739	45.96	2.364	-0.1776	91.870	3.2783
3000.0	1.5999	34.6629	27.748	45.42	2.455	-0.1786	91.870	3.4428
3200.0	1.5530	34.6682	27.757	44.97	2.545	-0.1790	91.870	3.6272
3400.0	1.5139	34.6736	27.766	44.58	2.635	-0.1787	91.870	3.8575
3600.0	1.4959	34.6775	27.771	44.58	2.724	-0.1782	91.870	4.0666
3800.0	1.4841	34.6809	27.776	44.69	2.813	-0.1778	91.870	4.2636
4000.0	1.4852	34.6834	27.780	45.05	2.903	-0.1772	91.870	4.4180
4200.0	1.4985	34.6846	27.781	45.70	2.994	-0.1768	91.850	4.4849
4400.0	1.5153	34.6854	27.782	46.44	3.086	-0.1766	91.800	4.5438
4600.0	1.5371	34.6855	27.783	47.31	3.180	-0.1767	91.780	4.5705
4632.0	1.5409	34.6857	27.783	47.45	3.195	-0.1765	91.780	4.5709

STATION: 14      DATE: May 4, 1999      1739 UT  
 LATITUDE: 33° 49.08 N.      LONGITUDE: 125° 08.61 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_{\theta}$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	11.6292	32.8435	24.983	296.41	0.006	-0.2777	90.650	8.2959
5.0	11.6312	32.8450	24.984	296.39	0.015	-0.2762	90.640	8.2527
10.0	11.6323	32.8469	24.986	296.38	0.030	-0.2746	90.660	8.2003
15.0	11.6351	32.8499	24.987	296.32	0.044	-0.2718	90.585	8.1978
20.0	11.6503	32.8634	24.995	295.69	0.059	-0.2582	90.510	8.2038
25.0	11.7163	32.9066	25.017	293.77	0.074	-0.2111	90.325	8.2073
30.0	11.7718	32.9443	25.036	292.07	0.089	-0.1705	90.130	8.2211
40.0	11.7608	32.9595	25.050	290.97	0.118	-0.1606	90.130	8.2208
50.0	11.8329	33.0140	25.079	288.44	0.147	-0.1035	90.120	8.1730
60.0	11.8952	33.0327	25.082	288.39	0.176	-0.0768	90.180	8.1640
70.0	11.9383	33.0522	25.090	287.94	0.204	-0.0532	90.400	8.1416
80.0	11.7591	33.0665	25.134	283.91	0.233	-0.0764	90.460	8.1385
100.0	10.7663	33.2370	25.446	254.58	0.288	-0.1249	91.130	7.1557
150.0	9.2092	33.7613	26.117	191.56	0.394	0.0247	91.370	4.4654
200.0	8.6149	33.9683	26.374	168.04	0.484	0.0933	91.480	4.8328
250.0	7.7889	34.0133	26.534	153.43	0.564	0.0035	91.540	4.5065
300.0	7.5203	34.0572	26.607	147.14	0.639	-0.0013	91.570	2.9660
350.0	6.8467	34.0723	26.713	137.45	0.710	-0.0838	91.600	2.4138
400.0	6.5191	34.1287	26.802	129.56	0.777	-0.0835	91.600	1.6886
450.0	6.0684	34.1531	26.880	122.49	0.840	-0.1228	91.600	1.2467
500.0	5.3758	34.1367	26.952	115.56	0.899	-0.2207	91.650	0.9376
550.0	4.9868	34.1646	27.019	109.30	0.955	-0.2440	91.720	0.7046
600.0	4.7681	34.2173	27.086	103.28	1.008	-0.2272	91.730	0.4043
650.0	4.7269	34.2721	27.135	99.21	1.059	-0.1890	91.720	0.2299
700.0	4.5652	34.3080	27.181	95.11	1.108	-0.1787	91.710	0.1605
750.0	4.4156	34.3442	27.227	91.12	1.154	-0.1666	91.740	0.1301
800.0	4.3324	34.3740	27.260	88.39	1.199	-0.1524	91.730	0.1423
1000.0	3.7131	34.4646	27.397	76.08	1.362	-0.1452	91.730	0.4110
1012.0	3.6689	34.4703	27.406	75.24	1.371	-0.1451	91.740	0.4406



STATION: 15      DATE: May 4, 1999      1944 UT  
 LATITUDE: 33° 56.93 N.      LONGITUDE: 125° 00.20 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_{\theta}$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.4803	33.1068	25.028	292.18	0.006	0.0981	89.210	8.4890
5.0	12.4589	33.1057	25.031	291.94	0.015	0.0930	89.190	7.6437
10.0	12.4526	33.1058	25.033	291.93	0.029	0.0917	89.200	7.5245
15.0	12.4391	33.1047	25.034	291.88	0.044	0.0879	89.175	7.3828
20.0	12.4154	33.1025	25.037	291.72	0.058	0.0814	88.980	7.2105
25.0	12.0490	33.0765	25.087	287.13	0.073	-0.0113	88.960	7.1412
30.0	11.9909	33.0741	25.096	286.37	0.087	-0.0246	88.940	7.0268
40.0	11.9530	33.1103	25.131	283.25	0.116	-0.0032	89.090	6.7009
50.0	11.8953	33.1392	25.165	280.31	0.144	0.0085	89.600	6.4600
60.0	11.9688	33.1801	25.183	278.83	0.172	0.0550	90.150	6.3230
70.0	12.0240	33.2153	25.200	277.44	0.200	0.0934	90.360	6.2706
80.0	11.6672	33.2190	25.270	271.03	0.227	0.0278	90.560	6.2816
100.0	10.0900	33.3196	25.627	237.29	0.277	-0.1783	91.270	5.5549
150.0	9.2056	33.8491	26.187	184.99	0.378	0.0937	91.470	3.3236
200.0	8.4040	34.0176	26.445	161.23	0.465	0.0998	91.470	2.8944
250.0	7.5830	34.0512	26.593	147.69	0.542	0.0036	91.520	2.5605
300.0	7.0181	34.0829	26.698	138.27	0.613	-0.0514	91.590	1.9090
350.0	6.2328	34.0499	26.776	131.00	0.681	-0.1824	91.540	1.6350
400.0	5.8198	34.0648	26.840	125.26	0.745	-0.2230	91.560	1.4144
450.0	5.8304	34.1455	26.903	120.01	0.806	-0.1584	91.560	1.0036
500.0	5.5936	34.1751	26.956	115.42	0.865	-0.1644	91.540	0.5801
550.0	5.1914	34.1910	27.017	109.82	0.922	-0.1998	91.580	0.4439
600.0	4.7569	34.2030	27.076	104.21	0.975	-0.2398	91.670	0.3399
650.0	4.5638	34.2378	27.125	99.82	1.026	-0.2338	91.680	0.2073
700.0	4.4064	34.2791	27.176	95.38	1.075	-0.2185	91.680	0.1269
750.0	4.2772	34.3150	27.218	91.65	1.122	-0.2042	91.680	0.0662
800.0	4.1823	34.3536	27.259	88.13	1.167	-0.1840	91.680	0.0354
1000.0	3.7923	34.4564	27.382	77.62	1.332	-0.1440	91.660	0.1821
1010.0	3.7789	34.4581	27.385	77.42	1.340	-0.1440	91.650	0.1964

STATION: 16      DATE: May 4, 1999      2153 UT  
 LATITUDE: 34° 04.89 N.      LONGITUDE: 124° 51.75 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.8736	33.0730	24.925	301.94	0.006	0.1501	88.630	9.1138
5.0	12.8734	33.0732	24.925	302.00	0.015	0.1501	88.650	9.1129
10.0	12.8711	33.0734	24.926	302.05	0.030	0.1497	88.650	9.1488
15.0	12.8182	33.0739	24.937	301.15	0.045	0.1392	88.630	9.1574
20.0	12.7481	33.0788	24.955	299.60	0.060	0.1289	88.430	9.1479
25.0	12.6331	33.1563	25.037	291.88	0.075	0.1674	88.165	9.1292
30.0	12.4913	33.1522	25.062	289.68	0.090	0.1358	88.490	9.1104
40.0	12.2736	33.1499	25.102	286.10	0.118	0.0907	89.720	8.8061
50.0	12.3488	33.2099	25.134	283.28	0.147	0.1530	89.950	8.7368
60.0	11.9969	33.1831	25.180	279.11	0.175	0.0628	90.440	8.6288
70.0	11.6263	33.2403	25.294	268.52	0.202	0.0373	90.730	8.3184
80.0	10.9655	33.2795	25.444	254.39	0.228	-0.0545	91.010	7.8819
100.0	10.6505	33.5753	25.730	227.62	0.277	0.1237	91.300	6.1061
150.0	9.1318	33.8853	26.227	181.17	0.377	0.1104	91.500	3.8744
200.0	8.4532	34.0136	26.434	162.26	0.463	0.1042	91.470	3.5386
250.0	7.7364	34.0642	26.581	148.90	0.540	0.0361	91.500	3.0136
300.0	7.1351	34.0537	26.659	142.04	0.613	-0.0584	91.600	2.8863
350.0	6.7752	34.0858	26.733	135.48	0.683	-0.0828	91.560	2.2274
400.0	6.2636	34.1010	26.813	128.25	0.748	-0.1386	91.540	1.7563
450.0	6.0070	34.1701	26.901	120.44	0.810	-0.1171	91.510	1.0983
500.0	5.2984	34.1933	27.006	110.40	0.868	-0.1850	91.470	0.6251
550.0	5.1496	34.2135	27.040	107.63	0.922	-0.1868	91.500	0.5042
600.0	4.7696	34.2336	27.099	102.08	0.975	-0.2142	91.580	0.3444
650.0	4.5210	34.2607	27.148	97.62	1.025	-0.2203	91.600	0.2336
700.0	4.5345	34.3222	27.196	93.69	1.072	-0.1708	91.590	0.1596
750.0	4.4032	34.3572	27.238	90.01	1.118	-0.1577	91.580	0.1499
800.0	4.2612	34.3813	27.273	87.00	1.163	-0.1541	91.590	0.1670
1000.0	3.7118	34.4654	27.398	76.01	1.326	-0.1447	91.610	0.4531
1012.0	3.6809	34.4683	27.403	75.53	1.335	-0.1455	91.600	0.4869

STATION: 17      DATE: May 4, 1999      2351 UT  
 LATITUDE: 34° 12.77 N.      LONGITUDE: 124° 43.18 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_{\theta}$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.6267	33.1943	25.067	288.41	0.006	0.1970	87.990	9.0411
5.0	12.6227	33.1942	25.068	288.42	0.014	0.1960	88.335	9.0273
10.0	12.6141	33.1943	25.070	288.37	0.029	0.1943	88.300	9.1039
15.0	12.4668	33.2037	25.106	285.08	0.043	0.1723	88.350	9.2046
20.0	12.4314	33.2511	25.150	281.05	0.057	0.2029	88.120	9.3782
25.0	12.3791	33.2659	25.171	279.12	0.071	0.2042	88.570	9.4527
30.0	12.3298	33.2735	25.187	277.78	0.085	0.2004	89.010	9.6041
40.0	12.2884	33.2772	25.198	276.98	0.113	0.1950	88.960	9.5047
50.0	12.1026	33.2584	25.219	275.23	0.141	0.1435	90.050	9.2222
60.0	11.9001	33.2762	25.271	270.50	0.168	0.1183	90.390	8.7716
70.0	10.9729	33.3719	25.514	247.48	0.194	0.0207	90.560	8.1744
80.0	10.5404	33.5669	25.742	225.98	0.218	0.0978	91.130	6.3774
100.0	9.7848	33.7182	25.989	202.86	0.260	0.0868	91.310	5.0194
150.0	8.9565	33.9549	26.309	173.32	0.355	0.1374	91.370	3.5346
200.0	8.2478	34.0309	26.479	157.94	0.437	0.0865	91.440	3.3358
250.0	7.6283	34.0491	26.585	148.49	0.513	0.0085	91.470	3.0931
300.0	6.9865	34.0594	26.683	139.58	0.585	-0.0743	91.540	2.6614
350.0	6.4393	34.0643	26.761	132.61	0.654	-0.1443	91.480	2.2897
400.0	6.0690	34.0884	26.828	126.67	0.718	-0.1733	91.490	1.6690
450.0	5.6924	34.1214	26.901	120.06	0.780	-0.1944	91.480	1.1904
500.0	5.4291	34.1548	26.960	114.88	0.839	-0.2001	91.480	0.8625
550.0	4.9525	34.1859	27.040	107.30	0.894	-0.2310	91.560	0.6187
600.0	4.7389	34.2222	27.093	102.57	0.947	-0.2266	91.560	0.3728
650.0	4.7031	34.2781	27.142	98.48	0.997	-0.1869	91.530	0.2169
700.0	4.5748	34.3129	27.184	94.86	1.045	-0.1738	91.540	0.1599
750.0	4.5109	34.3495	27.221	91.86	1.092	-0.1523	91.530	0.1409
800.0	4.3760	34.3792	27.259	88.52	1.137	-0.1437	91.530	0.1656
1000.0	3.7465	34.4593	27.389	76.87	1.302	-0.1462	91.560	0.4063
1200.0	3.2700	34.5068	27.474	69.27	1.448	-0.1553	91.550	0.7343
1400.0	2.8727	34.5456	27.543	63.07	1.580	-0.1615	91.590	1.1364
1600.0	2.5313	34.5735	27.596	58.13	1.701	-0.1696	91.610	1.4917
1800.0	2.2163	34.5983	27.642	53.56	1.812	-0.1766	91.610	1.8662
2000.0	2.0146	34.6179	27.675	50.55	1.916	-0.1778	91.620	2.2438
2200.0	1.8729	34.6331	27.699	48.48	2.015	-0.1776	91.610	2.5849
2400.0	1.7751	34.6429	27.716	47.26	2.111	-0.1782	91.600	2.8154
2600.0	1.6999	34.6530	27.731	46.23	2.204	-0.1769	91.590	3.1124
2800.0	1.6375	34.6591	27.741	45.59	2.296	-0.1777	91.590	3.3228
3000.0	1.5976	34.6646	27.750	45.26	2.387	-0.1775	91.580	3.5106
3200.0	1.5593	34.6698	27.758	44.94	2.477	-0.1773	91.570	3.7019
3400.0	1.5221	34.6735	27.765	44.70	2.567	-0.1783	91.570	3.8575
3600.0	1.4973	34.6777	27.771	44.58	2.656	-0.1780	91.570	4.0483
3800.0	1.4843	34.6812	27.776	44.67	2.745	-0.1775	91.570	4.2449
4000.0	1.4880	34.6834	27.779	45.10	2.835	-0.1770	91.560	4.3785
4200.0	1.4997	34.6845	27.781	45.73	2.926	-0.1768	91.530	4.4651
4400.0	1.5166	34.6855	27.782	46.45	3.018	-0.1765	91.510	4.5227
4496.0	1.5266	34.6858	27.783	46.84	3.063	-0.1763	91.480	4.5385

STATION: 18      DATE: May 5, 1999      0414 UT  
 LATITUDE: 34° 20.47 N.      LONGITUDE: 124° 34.79 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_{\theta}$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.6615	33.1334	25.013	293.55	0.006	0.1555	88.550	8.9089
5.0	12.6500	33.1331	25.015	293.43	0.015	0.1529	88.555	8.7676
10.0	12.6504	33.1343	25.016	293.46	0.029	0.1538	88.630	8.7478
15.0	12.6548	33.1604	25.036	291.73	0.044	0.1753	88.595	8.7450
20.0	12.6606	33.2601	25.112	284.61	0.058	0.2556	88.830	8.7496
25.0	12.6302	33.2771	25.131	282.92	0.073	0.2629	88.440	8.7620
30.0	12.4633	33.2954	25.178	278.61	0.087	0.2441	88.260	8.7856
40.0	12.2455	33.2952	25.220	274.87	0.114	0.2009	88.430	8.7205
50.0	12.2296	33.3090	25.234	273.80	0.142	0.2085	88.640	8.6003
60.0	12.2042	33.3169	25.245	272.98	0.169	0.2095	89.660	8.5564
70.0	12.1571	33.3159	25.253	272.43	0.196	0.1993	89.940	8.4926
80.0	11.1413	33.3652	25.479	251.07	0.223	0.0460	89.920	7.9599
100.0	10.2165	33.5103	25.754	225.23	0.270	-0.0044	91.020	5.8599
150.0	9.1351	33.9331	26.264	177.68	0.368	0.1488	91.170	3.5817
200.0	8.1843	34.0317	26.489	156.95	0.452	0.0775	91.240	3.4002
250.0	7.5080	34.0729	26.621	145.02	0.527	0.0100	91.330	2.8384
300.0	6.8590	34.0815	26.718	136.22	0.597	-0.0742	91.360	2.3790
350.0	6.1856	34.0695	26.798	128.93	0.663	-0.1729	91.340	2.1074
400.0	5.6263	34.0813	26.877	121.62	0.726	-0.2336	91.320	1.5778
450.0	5.3507	34.1201	26.941	115.93	0.786	-0.2362	91.330	1.1239
500.0	5.1896	34.1919	27.017	109.18	0.842	-0.1988	91.340	0.6290
550.0	4.8835	34.2181	27.074	104.08	0.896	-0.2133	91.360	0.4399
600.0	4.7274	34.2720	27.134	98.72	0.946	-0.1886	91.370	0.2484
650.0	4.5967	34.3001	27.171	95.58	0.995	-0.1811	91.350	0.1737
700.0	4.4733	34.3378	27.215	91.80	1.042	-0.1651	91.370	0.1428
750.0	4.3279	34.3744	27.260	87.84	1.086	-0.1521	91.370	0.1584
800.0	4.2465	34.4011	27.290	85.36	1.130	-0.1400	91.360	0.2094
1000.0	3.6991	34.4647	27.398	75.91	1.291	-0.1465	91.380	0.4667
1010.0	3.6642	34.4691	27.405	75.26	1.298	-0.1465	91.390	0.5019

STATION: 19      DATE: May 5, 1999      0643 UT  
 LATITUDE: 34° 28.45 N.      LONGITUDE: 124° 26.10 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_{\theta}$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.3994	33.0237	24.979	296.83	0.006	0.0158	88.000	9.1888
5.0	12.3995	33.0236	24.979	296.91	0.015	0.0157	87.990	9.0793
10.0	12.4018	33.0233	24.978	297.09	0.030	0.0158	87.990	9.0694
15.0	12.4079	33.0261	24.979	297.10	0.045	0.0191	87.905	9.0650
20.0	12.4146	33.0300	24.981	297.06	0.059	0.0234	87.940	9.0521
25.0	12.4296	33.0451	24.990	296.34	0.074	0.0383	87.950	9.0394
30.0	12.5052	33.1421	25.051	290.68	0.089	0.1305	87.800	9.0033
40.0	12.4403	33.1980	25.107	285.60	0.118	0.1619	88.820	8.7985
50.0	12.3869	33.2033	25.122	284.46	0.146	0.1553	89.340	8.7253
60.0	11.8735	33.2741	25.274	270.18	0.174	0.1115	90.170	8.3500
70.0	10.8360	33.4015	25.561	242.97	0.200	0.0194	90.780	7.3153
80.0	10.3437	33.6084	25.809	219.66	0.223	0.0961	91.040	5.6717
100.0	9.7730	33.7836	26.042	197.83	0.265	0.1366	91.150	4.2360
150.0	8.8800	33.9889	26.348	169.63	0.356	0.1521	91.100	3.1458
200.0	8.0139	34.0674	26.542	151.83	0.436	0.0802	91.130	2.8283
250.0	6.9428	34.0598	26.689	138.23	0.508	-0.0793	91.220	2.7516
300.0	6.4059	34.0548	26.757	132.21	0.575	-0.1555	91.220	2.4348
350.0	5.7942	34.0508	26.832	125.38	0.640	-0.2367	91.240	2.0484
400.0	5.5605	34.0967	26.897	119.66	0.701	-0.2293	91.240	1.4366
450.0	5.3756	34.1491	26.961	114.07	0.759	-0.2104	91.020	0.9204
500.0	5.1870	34.2177	27.038	107.23	0.814	-0.1787	91.250	0.4923
550.0	4.9503	34.2485	27.090	102.62	0.867	-0.1819	91.260	0.3354
600.0	4.7453	34.2807	27.139	98.29	0.917	-0.1797	91.270	0.2186
650.0	4.5553	34.3188	27.191	93.70	0.965	-0.1708	91.270	0.1629
700.0	4.4092	34.3488	27.231	90.23	1.011	-0.1633	91.290	0.1529
750.0	4.3074	34.3803	27.267	87.16	1.055	-0.1496	91.270	0.1644
800.0	4.1612	34.4022	27.300	84.27	1.098	-0.1479	91.260	0.2104
1000.0	3.6261	34.4742	27.413	74.36	1.256	-0.1461	91.290	0.5275
1010.0	3.5950	34.4768	27.418	73.88	1.263	-0.1471	91.310	0.5511

STATION: 20      DATE: May 5, 1999      0912 UT  
 LATITUDE: 34° 36.50' N.      LONGITUDE: 124° 17.57' W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.6027	32.9275	24.865	307.65	0.006	-0.0205	88.670	8.8560
5.0	12.6047	32.9276	24.865	307.75	0.015	-0.0202	88.725	8.8451
10.0	12.6086	32.9276	24.864	307.94	0.031	-0.0195	88.770	8.8884
15.0	12.6087	32.9277	24.865	308.05	0.046	-0.0196	88.785	8.9420
20.0	12.6085	32.9278	24.865	308.15	0.062	-0.0196	88.790	9.0204
25.0	12.6090	32.9279	24.865	308.27	0.077	-0.0195	88.765	9.0569
30.0	12.5485	32.9323	24.880	306.95	0.092	-0.0283	88.750	9.0064
40.0	12.1345	33.0020	25.013	294.50	0.122	-0.0545	88.830	9.0576
50.0	11.9338	33.1096	25.135	283.18	0.151	-0.0077	89.810	8.6625
60.0	11.5645	33.3574	25.396	258.56	0.178	0.1190	90.220	8.3214
70.0	11.0116	33.4492	25.567	242.42	0.204	0.0893	90.710	6.9917
80.0	10.1052	33.4268	25.707	229.21	0.227	-0.0898	90.900	5.9420
100.0	9.8711	33.6171	25.896	211.73	0.271	0.0211	90.980	5.2113
150.0	8.8618	33.9619	26.330	171.35	0.364	0.1279	91.080	3.5442
200.0	8.0397	34.0259	26.506	155.28	0.445	0.0513	91.120	3.5885
250.0	7.2101	34.0501	26.645	142.58	0.519	-0.0501	91.170	3.0677
300.0	6.6501	34.0800	26.745	133.54	0.588	-0.1034	91.130	2.2207
350.0	6.1891	34.0869	26.811	127.68	0.654	-0.1587	91.120	1.8878
400.0	5.7479	34.0952	26.873	122.10	0.716	-0.2078	91.140	1.5963
450.0	5.4725	34.1517	26.952	115.07	0.775	-0.1969	91.150	0.9135
500.0	5.2289	34.1970	27.017	109.28	0.832	-0.1902	91.170	0.6222
550.0	4.9138	34.2220	27.073	104.15	0.885	-0.2069	91.180	0.4058
600.0	4.7807	34.2833	27.137	98.52	0.936	-0.1738	91.190	0.2292
650.0	4.6355	34.3094	27.174	95.35	0.984	-0.1696	91.190	0.1724
700.0	4.5114	34.3433	27.215	91.85	1.031	-0.1567	91.180	0.1542
750.0	4.3231	34.3740	27.260	87.81	1.076	-0.1529	91.190	0.1639
800.0	4.2036	34.4026	27.296	84.74	1.119	-0.1433	91.200	0.2081
1000.0	3.6634	34.4678	27.404	75.27	1.278	-0.1475	91.220	0.4986
1012.0	3.6434	34.4735	27.411	74.71	1.287	-0.1451	91.210	0.5529

STATION: 21      DATE: May 5, 1999      1136 UT  
 LATITUDE: 34° 44.32 N.      LONGITUDE: 124° 09.04 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_{\theta}$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.5743	33.0929	24.999	294.93	0.006	0.1058	88.450	8.7735
5.0	12.5757	33.0929	24.999	295.02	0.015	0.1060	88.510	8.7785
10.0	12.5825	33.0935	24.998	295.22	0.030	0.1077	88.530	8.8524
15.0	12.5816	33.0935	24.998	295.32	0.044	0.1073	88.545	8.9466
20.0	12.5839	33.0931	24.998	295.51	0.059	0.1074	88.540	9.0378
25.0	12.5837	33.0934	24.998	295.60	0.074	0.1074	88.555	9.1819
30.0	12.5615	33.0918	25.001	295.42	0.089	0.1016	88.560	9.1076
40.0	12.5245	33.0853	25.004	295.45	0.118	0.0888	88.570	9.0934
50.0	12.0288	33.0304	25.055	290.72	0.148	-0.0526	88.970	9.0332
60.0	11.8580	33.0141	25.075	289.10	0.177	-0.0988	89.760	8.7318
70.0	11.3168	33.0845	25.229	274.62	0.205	-0.1452	90.080	8.6067
80.0	10.8818	33.2438	25.431	255.61	0.231	-0.0982	90.700	7.2732
100.0	10.2448	33.5979	25.818	219.21	0.279	0.0701	90.890	5.8507
150.0	9.1925	33.9233	26.247	179.29	0.378	0.1503	91.020	3.9083
200.0	8.2425	34.0220	26.473	158.53	0.462	0.0787	91.040	3.5217
250.0	7.5483	34.0639	26.608	146.26	0.538	0.0087	91.120	2.9677
300.0	6.4360	34.0102	26.718	135.92	0.608	-0.1869	91.120	3.2419
350.0	6.0072	34.0304	26.789	129.57	0.675	-0.2264	91.120	2.5229
400.0	5.6713	34.0850	26.874	121.90	0.738	-0.2252	91.100	1.5984
450.0	5.3578	34.1179	26.939	116.18	0.797	-0.2371	91.120	1.1165
500.0	5.2070	34.1668	26.995	111.26	0.854	-0.2166	91.120	0.7472
550.0	5.1163	34.2144	27.044	107.16	0.908	-0.1899	91.130	0.4984
600.0	4.9646	34.2865	27.119	100.49	0.960	-0.1508	91.100	0.2503
650.0	4.7585	34.3303	27.177	95.27	1.009	-0.1397	91.070	0.1707
700.0	4.6005	34.3610	27.220	91.59	1.056	-0.1332	91.050	0.1699
750.0	4.4095	34.3807	27.256	88.34	1.101	-0.1385	91.060	0.1815
800.0	4.2613	34.4016	27.289	85.49	1.144	-0.1381	91.080	0.2083
1000.0	3.6766	34.4640	27.400	75.70	1.305	-0.1492	91.170	0.4760
1200.0	3.2580	34.5159	27.483	68.46	1.449	-0.1493	91.160	0.8636
1400.0	2.8926	34.5451	27.541	63.34	1.581	-0.1602	91.220	1.1783
1600.0	2.5557	34.5725	27.593	58.49	1.702	-0.1684	91.220	1.5223
1800.0	2.2667	34.5952	27.636	54.39	1.815	-0.1751	91.220	1.8653
2000.0	2.0775	34.6174	27.670	51.36	1.921	-0.1735	91.200	2.2912
2200.0	1.9166	34.6311	27.694	49.17	2.021	-0.1760	91.220	2.6034
2400.0	1.8183	34.6419	27.712	47.88	2.118	-0.1759	91.220	2.8846
2600.0	1.7420	34.6515	27.726	46.89	2.213	-0.1751	91.220	3.1576
2800.0	1.6699	34.6584	27.738	46.08	2.306	-0.1760	91.200	3.4082
3000.0	1.6129	34.6647	27.749	45.47	2.397	-0.1763	91.170	3.6115
3200.0	1.5794	34.6686	27.756	45.31	2.488	-0.1769	91.130	3.7679
3400.0	1.5422	34.6728	27.763	45.05	2.578	-0.1775	91.170	3.9323
3600.0	1.5174	34.6763	27.769	44.99	2.668	-0.1778	91.160	4.0823
3800.0	1.4949	34.6805	27.775	44.88	2.758	-0.1774	91.170	4.3052
4000.0	1.4888	34.6834	27.779	45.11	2.848	-0.1769	91.150	4.4862
4200.0	1.4992	34.6850	27.782	45.68	2.939	-0.1765	91.100	4.5857
4274.0	1.5050	34.6855	27.782	45.93	2.973	-0.1763	91.100	4.6078

STATION: 22                      DATE: May 5, 1999                      1607 UT  
 LATITUDE: 34° 51.94 N.              LONGITUDE: 124° 00.25 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.6991	33.3021	25.137	281.80	0.006	0.2971	87.830	8.8881
5.0	12.7006	33.3034	25.138	281.81	0.014	0.2984	88.025	8.8206
10.0	12.7018	33.3039	25.138	281.91	0.028	0.2989	88.010	8.8044
15.0	12.6986	33.3039	25.139	281.97	0.042	0.2981	87.960	8.8021
20.0	12.6936	33.3035	25.139	282.02	0.056	0.2967	87.920	8.7888
25.0	12.6981	33.3036	25.139	282.22	0.070	0.2975	88.005	8.7784
30.0	12.6995	33.3036	25.139	282.36	0.085	0.2977	88.000	8.7642
40.0	12.6977	33.3036	25.139	282.57	0.113	0.2971	88.000	8.7376
50.0	12.6975	33.3031	25.139	282.84	0.141	0.2963	88.050	8.7064
60.0	12.6982	33.3036	25.140	283.05	0.169	0.2966	87.880	8.6831
70.0	12.6901	33.3075	25.145	282.85	0.198	0.2978	88.050	8.6582
80.0	11.4753	33.2753	25.349	263.50	0.225	0.0365	90.190	8.2763
100.0	10.5792	33.5801	25.746	226.07	0.275	0.1148	90.840	6.2155
150.0	9.1757	33.8798	26.216	182.25	0.375	0.1132	90.810	4.2875
200.0	8.2049	34.0241	26.480	157.82	0.459	0.0746	90.960	3.6472
250.0	7.2952	34.0076	26.599	146.92	0.535	-0.0718	90.970	4.1166
300.0	6.6308	34.0050	26.688	138.86	0.606	-0.1654	90.980	3.6078
350.0	6.1756	34.0188	26.759	132.58	0.674	-0.2143	90.930	3.0230
400.0	5.8086	34.0421	26.824	126.81	0.739	-0.2423	90.970	2.2070
450.0	5.5958	34.0939	26.891	120.89	0.801	-0.2278	90.980	1.4355
500.0	5.5679	34.1871	26.969	114.20	0.859	-0.1580	90.970	0.7447
550.0	5.3678	34.2274	27.025	109.29	0.915	-0.1505	90.980	0.4877
600.0	5.0757	34.2835	27.104	102.07	0.968	-0.1405	90.920	0.2818
650.0	4.8775	34.3193	27.155	97.52	1.018	-0.1351	90.910	0.2012
700.0	4.7217	34.3426	27.192	94.42	1.066	-0.1345	90.890	0.1745
750.0	4.5436	34.3693	27.233	90.79	1.112	-0.1332	90.930	0.1729
800.0	4.3403	34.3971	27.277	86.77	1.157	-0.1334	90.860	0.2069
1000.0	3.7000	34.4575	27.392	76.46	1.320	-0.1521	91.070	0.4391
1028.0	3.6550	34.4732	27.410	74.99	1.341	-0.1443	91.040	0.5084



STATION: 23      DATE: May 5, 1999      1849 UT  
 LATITUDE: 35° 00.14 N.      LONGITUDE: 123° 51.72 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.6559	33.3001	25.144	281.15	0.006	0.2869	88.240	9.0179
5.0	12.6568	33.3001	25.144	281.23	0.014	0.2870	88.285	9.0089
10.0	12.6542	33.3005	25.145	281.28	0.028	0.2867	88.360	8.9805
15.0	12.6472	33.3005	25.146	281.26	0.042	0.2852	88.380	8.9606
20.0	12.6408	33.3009	25.148	281.24	0.056	0.2841	88.380	8.9475
25.0	12.6357	33.3004	25.148	281.29	0.070	0.2825	88.380	8.9212
30.0	12.6235	33.3002	25.151	281.20	0.084	0.2798	88.370	8.9112
40.0	12.5953	33.3004	25.157	280.90	0.112	0.2741	88.340	8.8691
50.0	12.5889	33.3008	25.158	280.99	0.141	0.2728	88.400	8.8302
60.0	12.5826	33.3060	25.164	280.73	0.169	0.2755	88.680	8.7684
70.0	12.4550	33.3263	25.205	277.11	0.197	0.2660	89.610	8.6862
80.0	11.4835	33.3134	25.377	260.83	0.224	0.0683	89.960	8.3874
100.0	10.3374	33.6523	25.844	216.71	0.272	0.1295	90.660	6.1169
150.0	8.9608	33.9083	26.272	176.84	0.368	0.1012	90.770	4.1795
200.0	8.1942	34.0114	26.471	158.61	0.451	0.0630	90.780	4.2773
250.0	7.4590	34.0138	26.581	148.73	0.527	-0.0437	90.820	4.1464
300.0	6.6746	34.0113	26.688	138.97	0.599	-0.1546	90.840	3.6049
350.0	6.2106	34.0254	26.760	132.54	0.667	-0.2046	90.870	2.7246
400.0	5.9334	34.0679	26.829	126.47	0.732	-0.2065	90.870	1.9306
450.0	5.6184	34.1116	26.902	119.86	0.793	-0.2111	90.850	1.3203
500.0	5.3857	34.1632	26.972	113.71	0.851	-0.1986	90.880	0.8379
550.0	5.3014	34.2299	27.035	108.28	0.907	-0.1563	90.920	0.4705
600.0	5.0948	34.2710	27.092	103.23	0.960	-0.1482	90.880	0.2946
650.0	4.9406	34.3105	27.141	98.95	1.010	-0.1350	90.820	0.2052
700.0	4.6956	34.3458	27.197	93.87	1.058	-0.1348	90.840	0.1741
750.0	4.5458	34.3690	27.232	90.83	1.104	-0.1332	90.810	0.1768
800.0	4.3766	34.3915	27.269	87.62	1.149	-0.1340	90.850	0.1979
1000.0	3.7423	34.4649	27.394	76.40	1.312	-0.1422	90.980	0.4661
1010.0	3.7301	34.4656	27.396	76.29	1.320	-0.1429	90.950	0.4979

STATION: 24      DATE: May 5, 1999      2125 UT  
 LATITUDE: 35° 07.94 N.      LONGITUDE: 123° 43.02 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.6769	33.3165	25.152	280.33	0.006	0.3041	88.060	9.0542
5.0	12.6757	33.3167	25.153	280.37	0.014	0.3039	88.050	9.0427
10.0	12.6785	33.3162	25.152	280.57	0.028	0.3040	88.100	9.0317
15.0	12.6770	33.3166	25.153	280.64	0.042	0.3038	88.095	9.0148
20.0	12.6515	33.3176	25.159	280.20	0.056	0.2995	88.000	9.0021
25.0	12.6057	33.3176	25.168	279.47	0.070	0.2902	88.020	8.9979
30.0	12.5852	33.3166	25.171	279.29	0.084	0.2852	87.990	8.9802
40.0	12.5572	33.3154	25.176	279.09	0.112	0.2784	88.060	8.9321
50.0	12.4634	33.3218	25.199	277.13	0.140	0.2646	88.790	8.8316
60.0	12.4032	33.3303	25.217	275.63	0.167	0.2592	89.420	8.7036
70.0	12.1287	33.3095	25.254	272.39	0.195	0.1887	89.810	8.5206
80.0	10.7025	33.4486	25.622	237.44	0.221	0.0327	90.320	7.5085
100.0	10.2679	33.6714	25.871	214.15	0.266	0.1325	90.660	5.2481
150.0	9.0084	33.9026	26.260	177.99	0.362	0.1043	90.790	4.0586
200.0	8.1221	34.0157	26.486	157.23	0.445	0.0555	90.840	4.4625
250.0	7.4052	34.0273	26.599	146.98	0.521	-0.0407	90.270	3.8523
300.0	6.6021	34.0114	26.697	138.01	0.592	-0.1641	90.780	3.4661
350.0	6.0588	34.0433	26.793	129.26	0.659	-0.2097	90.840	2.3634
400.0	5.8687	34.0999	26.862	123.27	0.722	-0.1892	90.830	1.6052
450.0	5.5119	34.1236	26.925	117.64	0.782	-0.2144	90.860	1.1433
500.0	5.0890	34.1512	26.997	110.99	0.839	-0.2425	90.860	0.8188
550.0	5.1736	34.2450	27.062	105.58	0.894	-0.1592	90.820	0.3902
600.0	5.0291	34.2789	27.106	101.84	0.945	-0.1495	90.840	0.2610
650.0	4.8619	34.3111	27.151	97.94	0.995	-0.1433	90.830	0.1934
700.0	4.6571	34.3446	27.200	93.49	1.043	-0.1400	90.840	0.1633
750.0	4.5460	34.3653	27.229	91.11	1.089	-0.1361	90.790	0.1704
800.0	4.4199	34.3852	27.259	88.60	1.134	-0.1343	90.790	0.1906
1000.0	3.7902	34.4612	27.386	77.24	1.299	-0.1404	90.860	0.4448
1012.0	3.7595	34.4638	27.392	76.78	1.308	-0.1415	90.860	0.4699

STATION: 25      DATE: May 5, 1999      2350 UT  
 LATITUDE: 35° 15.62' N.      LONGITUDE: 123° 34.20 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.6502	33.3182	25.159	279.71	0.006	0.3001	88.330	9.1214
5.0	12.6523	33.3182	25.158	279.82	0.014	0.3005	88.475	8.9976
10.0	12.6401	33.3185	25.161	279.69	0.028	0.2982	88.430	8.9810
15.0	12.6414	33.3183	25.161	279.85	0.042	0.2981	88.425	8.9686
20.0	12.6315	33.3185	25.163	279.77	0.056	0.2962	88.360	8.9485
25.0	12.6128	33.3203	25.168	279.41	0.070	0.2937	88.205	8.9361
30.0	12.5831	33.3198	25.174	279.01	0.084	0.2873	87.740	8.9373
40.0	12.5620	33.3231	25.181	278.62	0.112	0.2855	87.660	8.8895
50.0	12.5413	33.3225	25.184	278.51	0.140	0.2806	88.040	8.8220
60.0	12.5049	33.3253	25.194	277.87	0.167	0.2753	88.550	8.7693
70.0	11.6068	33.3960	25.418	256.68	0.195	0.1575	89.760	8.3422
80.0	10.0855	33.6027	25.848	215.86	0.218	0.0468	90.510	6.0282
100.0	9.4701	33.7930	26.099	192.34	0.259	0.0935	90.670	4.5178
150.0	8.7277	33.9812	26.366	167.89	0.347	0.1220	90.750	3.5931
200.0	7.9199	34.0070	26.509	154.96	0.427	0.0185	90.770	4.3985
250.0	7.5116	34.0514	26.603	146.67	0.503	-0.0065	90.750	3.2837
300.0	6.7600	34.0229	26.685	139.25	0.574	-0.1339	90.790	3.2610
350.0	6.1696	34.0333	26.771	131.42	0.642	-0.2036	90.780	2.6662
400.0	5.8473	34.0796	26.849	124.51	0.706	-0.2079	90.760	1.7680
450.0	5.4652	34.1019	26.913	118.68	0.766	-0.2371	90.790	1.2799
500.0	5.1541	34.1494	26.988	111.91	0.824	-0.2364	90.830	0.8413
550.0	4.8844	34.1868	27.049	106.42	0.878	-0.2379	90.850	0.5606
600.0	4.7139	34.2406	27.111	100.90	0.930	-0.2148	90.850	0.3327
650.0	4.8002	34.3162	27.162	96.82	0.980	-0.1462	90.760	0.1930
700.0	4.6858	34.3438	27.197	93.90	1.028	-0.1375	90.740	0.1674
750.0	4.5201	34.3694	27.236	90.50	1.074	-0.1357	90.730	0.1712
800.0	4.3456	34.3969	27.277	86.84	1.118	-0.1330	90.700	0.2032
1000.0	3.8653	34.4546	27.374	78.62	1.283	-0.1382	90.690	0.4023
1200.0	3.3568	34.5081	27.467	70.20	1.432	-0.1463	90.860	0.7856
1400.0	2.9722	34.5455	27.534	64.24	1.566	-0.1530	90.880	1.1620
1600.0	2.6044	34.5736	27.590	58.99	1.689	-0.1636	90.880	1.5341
1800.0	2.2810	34.5941	27.634	54.64	1.803	-0.1748	90.910	1.8532
2000.0	2.0951	34.6162	27.668	51.66	1.909	-0.1731	90.910	2.2634
2200.0	1.9457	34.6296	27.691	49.65	2.010	-0.1750	90.910	2.5789
2400.0	1.8326	34.6407	27.710	48.15	2.108	-0.1758	90.900	2.8389
2600.0	1.7374	34.6504	27.726	46.91	2.203	-0.1763	90.890	3.1156
2800.0	1.6790	34.6591	27.738	46.16	2.296	-0.1749	90.870	3.4361
3000.0	1.6307	34.6636	27.747	45.80	2.388	-0.1760	90.860	3.5840
3200.0	1.5910	34.6677	27.754	45.55	2.479	-0.1768	90.860	3.7332
3400.0	1.5677	34.6719	27.760	45.49	2.570	-0.1765	90.840	3.9004
3600.0	1.5389	34.6752	27.767	45.39	2.661	-0.1772	90.840	4.0202
3800.0	1.5121	34.6795	27.773	45.22	2.751	-0.1770	90.810	4.2039
4000.0	1.4962	34.6835	27.779	45.22	2.842	-0.1764	90.760	4.4134
4036.0	1.4959	34.6841	27.780	45.27	2.858	-0.1762	90.730	4.4394

STATION: 26      DATE: May 6, 1999      0356 UT  
 LATITUDE: 35° 23.32 N.      LONGITUDE: 123° 25.66 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.6102	33.3777	25.213	274.58	0.005	0.3394	87.500	7.3330
5.0	12.6111	33.3777	25.213	274.67	0.014	0.3394	87.510	7.4899
10.0	12.6118	33.3779	25.213	274.79	0.027	0.3397	87.440	8.5603
15.0	12.6138	33.3780	25.213	274.93	0.041	0.3400	87.580	9.4755
20.0	12.6123	33.3782	25.213	275.01	0.055	0.3397	87.600	9.9287
25.0	12.6135	33.3781	25.213	275.16	0.069	0.3398	87.600	10.2206
30.0	12.6091	33.3773	25.213	275.26	0.082	0.3381	87.440	10.1677
40.0	12.5923	33.3768	25.216	275.22	0.110	0.3341	87.700	9.7710
50.0	12.5248	33.3753	25.229	274.32	0.137	0.3192	88.290	9.2501
60.0	12.5216	33.3750	25.229	274.51	0.165	0.3181	88.600	8.5451
70.0	12.3750	33.3747	25.257	272.07	0.192	0.2887	89.160	7.9362
80.0	10.9453	33.5319	25.644	235.39	0.218	0.1427	90.010	7.5977
100.0	10.2141	33.6718	25.881	213.24	0.263	0.1235	90.510	5.5827
150.0	8.7110	33.9530	26.346	169.73	0.355	0.0971	90.690	3.2962
200.0	8.0025	34.0488	26.529	153.04	0.435	0.0638	90.670	2.6068
250.0	7.3689	34.0598	26.630	144.06	0.509	-0.0201	90.720	2.1008
300.0	6.6548	34.0701	26.737	134.34	0.578	-0.1107	90.750	1.8110
350.0	6.0628	34.0484	26.797	128.93	0.644	-0.2051	90.730	1.5514
400.0	5.5775	34.0728	26.876	121.65	0.707	-0.2462	90.730	1.3005
450.0	5.3520	34.1269	26.946	115.44	0.766	-0.2307	90.740	0.9577
500.0	5.1506	34.1521	26.990	111.67	0.823	-0.2347	90.740	0.6715
550.0	4.8830	34.1909	27.052	106.10	0.878	-0.2349	90.760	0.4868
600.0	4.7354	34.2512	27.117	100.37	0.930	-0.2041	90.760	0.3086
650.0	4.8004	34.3172	27.162	96.75	0.979	-0.1454	90.670	0.1819
700.0	4.6430	34.3499	27.206	92.93	1.026	-0.1373	90.670	0.0953
750.0	4.4564	34.3746	27.247	89.35	1.072	-0.1384	90.690	0.0575
800.0	4.3354	34.3940	27.275	86.94	1.116	-0.1363	90.680	0.0481
1000.0	3.7749	34.4645	27.391	76.82	1.280	-0.1393	90.670	0.1397
1010.0	3.7336	34.4663	27.396	76.28	1.287	-0.1420	90.690	0.1752

STATION: 27      DATE: May 6, 1999      0617 UT  
 LATITUDE: 35° 31.17 N.      LONGITUDE: 123° 16.80 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_{\theta}$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	12.4549	33.3569	25.227	273.26	0.005	0.2920	87.280	7.8389
5.0	12.4545	33.3569	25.227	273.32	0.014	0.2919	87.290	7.8326
10.0	12.4501	33.3563	25.227	273.40	0.027	0.2904	87.200	7.8300
15.0	12.4602	33.3575	25.226	273.62	0.041	0.2932	87.320	7.8235
20.0	12.4701	33.3605	25.227	273.70	0.055	0.2974	87.300	7.8000
25.0	12.4699	33.3606	25.227	273.80	0.068	0.2973	87.385	7.7997
30.0	12.4866	33.3658	25.228	273.84	0.082	0.3047	87.400	7.7832
40.0	12.5039	33.3768	25.234	273.59	0.109	0.3166	87.930	7.7232
50.0	12.5139	33.3828	25.237	273.56	0.137	0.3230	88.030	7.6793
60.0	12.5066	33.3903	25.244	273.11	0.164	0.3273	88.640	7.6184
70.0	12.4326	33.3894	25.258	272.05	0.191	0.3117	89.110	7.5683
80.0	12.1684	33.4077	25.323	266.10	0.218	0.2742	89.470	7.4317
100.0	10.0516	33.6079	25.858	215.32	0.265	0.0447	90.430	5.1321
150.0	8.8995	33.8863	26.264	177.53	0.363	0.0740	90.190	3.7788
200.0	8.2756	34.0159	26.463	159.46	0.447	0.0788	90.530	3.4523
250.0	7.5588	34.0322	26.581	148.76	0.524	-0.0149	90.610	3.2340
300.0	6.7969	34.0559	26.706	137.29	0.595	-0.1029	90.670	2.5732
350.0	6.3511	34.1000	26.801	128.81	0.662	-0.1275	90.650	1.7303
400.0	6.1101	34.1475	26.869	122.81	0.725	-0.1214	90.660	1.1355
450.0	5.7706	34.1866	26.943	116.19	0.785	-0.1333	90.670	0.7846
500.0	5.4501	34.2252	27.013	109.90	0.841	-0.1420	90.670	0.4997
550.0	5.1908	34.2565	27.069	104.94	0.895	-0.1481	90.660	0.3219
600.0	4.9142	34.2929	27.130	99.41	0.946	-0.1514	90.620	0.2210
650.0	4.7214	34.3090	27.165	96.41	0.995	-0.1605	90.640	0.1582
700.0	4.5859	34.3511	27.213	92.15	1.042	-0.1426	90.670	0.1279
750.0	4.4213	34.3702	27.247	89.26	1.087	-0.1456	90.670	0.1271
800.0	4.2204	34.3843	27.280	86.30	1.131	-0.1559	90.740	0.1333
1000.0	3.7308	34.4685	27.398	76.00	1.293	-0.1405	90.700	0.3866
1010.0	3.7069	34.4697	27.402	75.71	1.300	-0.1419	90.700	0.4075

STATION: 28      DATE: May 6, 1999      0838 UT  
 LATITUDE: 35° 39.21 N.      LONGITUDE: 123° 08.07 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_{\theta}$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	11.3118	33.2453	25.353	261.24	0.010	-0.0163	82.220	9.0836
5.0	11.3122	33.2458	25.354	261.22	0.013	-0.0158	82.300	9.0892
10.0	11.3116	33.2460	25.354	261.31	0.026	-0.0159	82.300	9.0916
15.0	11.3144	33.2467	25.354	261.41	0.039	-0.0149	82.285	9.1664
20.0	11.3147	33.2468	25.354	261.52	0.052	-0.0149	82.350	9.1825
25.0	11.3151	33.2464	25.354	261.66	0.065	-0.0152	82.390	9.1754
30.0	11.3637	33.2841	25.375	259.82	0.078	0.0237	83.600	9.0230
40.0	11.1164	33.3529	25.473	250.70	0.104	0.0325	83.800	8.5718
50.0	10.9848	33.4053	25.538	244.79	0.129	0.0499	84.460	8.4438
60.0	10.8659	33.4671	25.607	238.41	0.153	0.0773	85.930	7.3216
70.0	10.3490	33.6050	25.805	219.79	0.176	0.0946	88.470	5.9549
80.0	9.9145	33.6960	25.950	206.19	0.197	0.0915	89.870	4.9517
100.0	9.4555	33.7984	26.106	191.71	0.237	0.0953	90.090	4.5327
150.0	8.5509	33.9958	26.404	164.16	0.325	0.1060	90.300	3.9192
200.0	7.9516	34.0427	26.532	152.76	0.403	0.0515	90.380	3.3529
250.0	7.3071	34.0449	26.627	144.31	0.478	-0.0406	90.480	3.1934
300.0	6.7772	34.0468	26.702	137.70	0.548	-0.1127	90.540	2.7576
350.0	6.3044	34.0842	26.794	129.37	0.615	-0.1460	90.550	1.8913
400.0	6.0884	34.1467	26.872	122.59	0.678	-0.1247	90.550	1.1624
450.0	5.7575	34.1772	26.937	116.72	0.738	-0.1423	90.570	0.8123
500.0	5.3257	34.1855	26.996	111.32	0.795	-0.1880	90.580	0.6513
550.0	5.0916	34.2174	27.049	106.64	0.850	-0.1904	90.600	0.4468
600.0	4.8003	34.2560	27.113	100.78	0.902	-0.1932	90.610	0.2811
650.0	4.6362	34.2984	27.166	96.18	0.951	-0.1782	90.610	0.1878
700.0	4.5666	34.3377	27.205	92.92	0.998	-0.1552	90.610	0.1487
750.0	4.5034	34.3842	27.249	89.20	1.044	-0.1258	90.560	0.1926
800.0	4.3923	34.4064	27.279	86.70	1.088	-0.1206	90.540	0.2307
1000.0	3.8538	34.4575	27.377	78.27	1.252	-0.1371	90.550	0.4080
1008.0	3.8351	34.4588	27.380	78.01	1.258	-0.1379	90.540	0.4173

STATION: 29      DATE: May 6, 1999      1100 UT  
 LATITUDE: 35° 46.93 N.      LONGITUDE: 122° 59.36 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	10.8880	33.3074	25.478	249.39	0.005	-0.0446	78.800	7.5585
5.0	10.8886	33.3081	25.478	249.41	0.012	-0.0440	78.670	7.9159
10.0	10.8892	33.3085	25.478	249.49	0.025	-0.0437	78.640	8.9700
15.0	10.8907	33.3102	25.480	249.49	0.037	-0.0421	78.690	9.9686
20.0	10.8918	33.3095	25.479	249.67	0.050	-0.0427	78.700	10.7901
25.0	10.8898	33.3237	25.490	248.69	0.062	-0.0319	78.600	11.1870
30.0	10.8744	33.3378	25.504	247.49	0.075	-0.0235	78.790	11.4639
40.0	10.6977	33.3771	25.566	241.83	0.099	-0.0242	81.190	11.4189
50.0	10.1801	33.4824	25.738	225.71	0.123	-0.0320	88.650	10.9924
60.0	9.9346	33.5004	25.793	220.61	0.145	-0.0601	87.990	10.2531
70.0	9.9572	33.6391	25.898	210.89	0.166	0.0538	89.140	9.2643
80.0	9.9568	33.7231	25.964	204.86	0.187	0.1202	89.750	8.3803
100.0	9.5988	33.9265	26.183	184.47	0.226	0.2206	89.990	7.4726
150.0	8.6897	34.0389	26.417	163.04	0.312	0.1617	90.190	5.6487
200.0	8.0014	34.0606	26.539	152.15	0.391	0.0730	90.120	4.2641
250.0	7.5399	34.1003	26.638	143.44	0.465	0.0363	90.390	3.2761
300.0	6.9592	34.1177	26.733	134.88	0.535	-0.0320	90.310	2.6050
350.0	6.5387	34.1559	26.820	127.11	0.600	-0.0588	90.460	2.1468
400.0	6.1295	34.1952	26.905	119.51	0.662	-0.0812	90.460	1.7949
450.0	5.7184	34.2101	26.968	113.78	0.720	-0.1211	90.470	1.4624
500.0	5.3238	34.2383	27.038	107.36	0.776	-0.1465	90.430	1.1988
550.0	5.3186	34.2986	27.087	103.39	0.828	-0.1001	89.940	1.0208
600.0	5.1670	34.3221	27.124	100.32	0.879	-0.0997	89.970	0.8427
650.0	4.9971	34.3456	27.163	97.03	0.929	-0.1010	90.040	0.6910
700.0	4.7847	34.3696	27.206	93.18	0.976	-0.1063	89.900	0.5590
750.0	4.6040	34.3889	27.242	90.06	1.022	-0.1113	90.130	0.4517
800.0	4.4641	34.4066	27.272	87.55	1.066	-0.1128	90.110	0.3887
1000.0	3.8723	34.4622	27.379	78.14	1.233	-0.1315	90.220	0.2339
1200.0	3.3379	34.5046	27.466	70.23	1.381	-0.1508	90.530	0.2333
1400.0	2.9263	34.5396	27.533	64.14	1.516	-0.1616	90.520	0.3248
1600.0	2.5974	34.5683	27.586	59.30	1.639	-0.1683	90.500	0.4483
1800.0	2.2863	34.5937	27.633	54.73	1.753	-0.1747	90.540	0.5845
2000.0	2.0788	34.6146	27.668	51.58	1.859	-0.1756	90.560	0.7450
2200.0	1.9268	34.6339	27.696	49.10	1.960	-0.1730	90.570	0.9096
2400.0	1.8220	34.6454	27.714	47.68	2.057	-0.1729	90.550	1.0788
2600.0	1.7513	34.6534	27.727	46.88	2.151	-0.1730	90.550	1.2236
2800.0	1.7157	34.6579	27.735	46.74	2.245	-0.1733	90.530	1.3434
3000.0	1.6633	34.6632	27.744	46.28	2.338	-0.1741	90.540	1.4258
3200.0	1.6176	34.6677	27.752	45.93	2.430	-0.1750	90.540	1.5062
3400.0	1.5940	34.6708	27.758	45.95	2.522	-0.1756	90.510	1.5675
3600.0	1.5701	34.6738	27.763	45.96	2.614	-0.1762	90.480	1.6224
3708.0	1.5551	34.6764	27.767	45.85	2.663	-0.1760	90.330	1.6448

STATION: 30      DATE: May 6, 1999      1518 UT  
 LATITUDE: 35° 54.48 N.      LONGITUDE: 122° 50.43 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_{\theta}$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	10.8807	33.2043	25.399	256.90	0.005	-0.1282	78.620	10.0662
5.0	10.8795	33.2040	25.399	256.96	0.013	-0.1287	78.860	10.6094
10.0	10.8699	33.2102	25.405	256.45	0.026	-0.1256	78.890	12.8068
15.0	10.8627	33.2158	25.411	256.02	0.038	-0.1226	79.095	13.9177
20.0	10.8598	33.2174	25.413	255.95	0.051	-0.1219	79.340	14.0887
25.0	10.8148	33.2281	25.429	254.51	0.064	-0.1217	79.845	13.8984
30.0	10.7654	33.2353	25.444	253.25	0.077	-0.1249	80.120	13.5920
40.0	10.5420	33.2537	25.497	248.38	0.102	-0.1504	82.620	12.6565
50.0	10.1387	33.3657	25.654	233.68	0.126	-0.1321	85.670	11.8216
60.0	9.8540	33.4132	25.739	225.79	0.149	-0.1433	86.820	10.6388
70.0	9.7949	33.5032	25.819	218.37	0.171	-0.0818	87.420	9.7960
80.0	9.7501	33.6136	25.913	209.67	0.193	-0.0018	89.200	8.8796
100.0	9.5183	33.8025	26.099	192.39	0.233	0.1090	89.710	6.4777
150.0	8.6729	34.0057	26.393	165.25	0.321	0.1328	90.170	3.4557
200.0	7.9602	34.0443	26.532	152.77	0.401	0.0540	90.300	2.7583
250.0	7.4991	34.0809	26.628	144.30	0.475	0.0151	90.390	2.3584
300.0	7.1443	34.0880	26.684	139.61	0.546	-0.0299	90.420	2.0433
350.0	6.4335	34.1190	26.805	128.47	0.613	-0.1017	90.400	1.6298
400.0	6.2600	34.1769	26.874	122.56	0.676	-0.0790	89.710	1.1301
450.0	5.8911	34.1978	26.937	116.89	0.735	-0.1096	90.380	0.7693
500.0	5.7282	34.2407	26.992	112.24	0.792	-0.0963	90.350	0.5313
550.0	5.5167	34.2824	27.051	107.07	0.847	-0.0895	90.400	0.3583
600.0	5.2933	34.3029	27.094	103.32	0.900	-0.1002	90.340	0.2362
650.0	4.9731	34.3426	27.163	96.96	0.950	-0.1061	90.330	0.1605
700.0	4.8219	34.3676	27.200	93.78	0.998	-0.1038	89.960	0.1232
750.0	4.6379	34.3887	27.238	90.48	1.044	-0.1078	90.120	0.1133
800.0	4.4421	34.4098	27.276	87.04	1.088	-0.1126	90.040	0.1205
1000.0	3.9753	34.4556	27.363	79.85	1.255	-0.1265	90.080	0.1980
1010.0	3.9375	34.4583	27.369	79.29	1.263	-0.1282	90.060	0.2271



STATION: 31      DATE: May 6, 1999      1739 UT  
 LATITUDE: 36° 02.38, N.      LONGITUDE: 122° 44.49 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	10.8330	33.3644	25.532	244.24	0.005	-0.0092	79.880	10.1668
5.0	10.8152	33.3664	25.536	243.86	0.012	-0.0108	79.750	9.0877
10.0	10.7471	33.3908	25.567	241.02	0.024	-0.0038	79.570	9.0503
15.0	10.5948	33.4770	25.661	232.20	0.036	0.0374	79.820	8.8603
20.0	10.5583	33.5445	25.720	226.70	0.048	0.0845	80.040	8.6512
25.0	10.5638	33.6044	25.766	222.46	0.059	0.1329	79.900	8.5222
30.0	10.5679	33.6194	25.777	221.52	0.070	0.1454	79.720	8.4485
40.0	10.4386	33.6068	25.790	220.52	0.092	0.1124	80.540	8.1870
50.0	10.3578	33.5924	25.793	220.46	0.114	0.0865	81.200	7.9080
60.0	10.0099	33.5788	25.842	216.01	0.136	0.0151	85.670	7.1821
70.0	9.7896	33.7112	25.982	202.87	0.157	0.0826	89.150	5.7386
80.0	9.5354	33.8255	26.114	190.57	0.176	0.1304	89.950	4.3143
100.0	9.2230	33.8894	26.215	181.34	0.214	0.1293	90.100	3.7134
150.0	8.4121	34.0134	26.439	160.80	0.299	0.0985	90.270	3.3418
200.0	7.6765	34.0551	26.582	147.92	0.376	0.0209	90.380	2.9433
250.0	7.1255	34.0568	26.662	140.93	0.448	-0.0566	90.480	2.6403
300.0	6.5176	34.0678	26.753	132.70	0.517	-0.1306	90.470	2.1588
350.0	6.2990	34.1317	26.832	125.77	0.581	-0.1091	90.450	1.5475
400.0	6.2312	34.1777	26.878	122.13	0.643	-0.0821	90.420	1.0671
450.0	5.9668	34.1834	26.916	118.93	0.703	-0.1116	90.420	0.8385
500.0	5.6895	34.2348	26.992	112.19	0.761	-0.1057	90.390	0.5603
550.0	5.4614	34.2707	27.048	107.24	0.816	-0.1053	90.340	0.3715
600.0	5.2796	34.2972	27.091	103.57	0.869	-0.1062	90.050	0.2846
650.0	5.0436	34.3211	27.138	99.42	0.919	-0.1150	90.270	0.2100
700.0	4.7928	34.3354	27.178	95.82	0.968	-0.1323	90.460	0.1566
750.0	4.7019	34.3703	27.216	92.63	1.015	-0.1153	90.470	0.1412
800.0	4.4336	34.3841	27.257	88.85	1.061	-0.1338	90.470	0.1307
1000.0	3.8316	34.4573	27.379	78.02	1.226	-0.1394	90.430	0.3323
1010.0	3.8010	34.4611	27.385	77.46	1.234	-0.1395	90.460	0.3473

STATION: 32      DATE: May 6, 1999      1949 UT  
 LATITUDE: 36° 10.27 N.      LONGITUDE: 122° 32.57 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	11.6007	33.5250	25.518	245.53	0.005	0.2604	76.320	9.1576
5.0	11.5990	33.5255	25.519	245.54	0.012	0.2603	76.330	10.9004
10.0	11.5431	33.5366	25.538	243.85	0.025	0.2585	76.260	13.4799
15.0	10.5295	33.6314	25.793	219.69	0.036	0.1485	79.750	15.7361
20.0	10.2467	33.5962	25.814	217.76	0.047	0.0707	83.670	16.7011
25.0	10.1680	33.5979	25.829	216.45	0.058	0.0583	84.980	16.9249
30.0	10.0662	33.5895	25.840	215.53	0.069	0.0339	85.970	16.3778
40.0	9.8070	33.5871	25.882	211.76	0.090	-0.0125	87.910	15.7183
50.0	9.6363	33.6352	25.948	205.69	0.111	-0.0032	88.990	14.7068
60.0	9.6246	33.8152	26.091	192.35	0.131	0.1375	88.840	13.0969
70.0	9.4003	33.8700	26.170	184.97	0.150	0.1435	89.330	11.3958
80.0	9.1791	33.9152	26.241	178.38	0.168	0.1430	89.510	9.8899
100.0	8.7625	33.9716	26.352	168.23	0.203	0.1207	89.940	7.7018
150.0	8.2971	34.0333	26.472	157.63	0.284	0.0967	90.130	5.2754
200.0	7.9251	34.0932	26.576	148.63	0.360	0.0875	90.240	4.0098
250.0	7.4094	34.1088	26.663	140.98	0.433	0.0244	90.320	2.9824
300.0	6.8485	34.1335	26.761	132.21	0.501	-0.0345	90.320	2.1717
350.0	6.5658	34.1561	26.817	127.46	0.566	-0.0551	90.380	1.4747
400.0	6.0385	34.1760	26.901	119.77	0.628	-0.1079	90.360	1.0462
450.0	5.9715	34.2245	26.948	115.94	0.687	-0.0785	90.270	0.7296
500.0	5.6335	34.2386	27.002	111.20	0.743	-0.1095	90.350	0.5207
550.0	5.4356	34.2755	27.055	106.56	0.798	-0.1045	90.370	0.3615
600.0	5.1197	34.2971	27.110	101.60	0.850	-0.1248	90.400	0.2362
650.0	4.9969	34.3345	27.154	97.85	0.900	-0.1098	90.370	0.1572
700.0	4.8260	34.3698	27.202	93.67	0.947	-0.1016	90.290	0.1138
750.0	4.6518	34.3891	27.237	90.62	0.993	-0.1060	90.290	0.0967
800.0	4.4615	34.4099	27.274	87.27	1.038	-0.1105	90.130	0.0966
1000.0	3.9449	34.4575	27.368	79.35	1.204	-0.1280	90.160	0.1496
1010.0	3.9184	34.4606	27.373	78.89	1.212	-0.1283	90.100	0.1557

STATION: 33      DATE: May 7, 1999      0357 UT  
 LATITUDE: 36° 18.04 N.      LONGITUDE: 122° 23.70 W.

Pres. (dbar)	Temp. (°C)	Sal.	$\gamma_\theta$ (kg/m <sup>3</sup> )	$\delta$	$\Sigma\Delta D$	$\pi$	Trans. (%)	Oxygen (mg/l)
2.0	11.3817	33.4741	25.519	245.48	0.005	0.1789	81.640	9.0729
5.0	11.3731	33.4752	25.521	245.32	0.012	0.1780	81.620	9.0098
10.0	11.2742	33.4875	25.549	242.81	0.024	0.1693	81.230	8.9030
15.0	10.8347	33.5517	25.677	230.69	0.036	0.1399	83.535	8.5784
20.0	10.3812	33.6167	25.807	218.44	0.047	0.1105	87.930	7.3898
25.0	10.3833	33.6199	25.810	218.34	0.058	0.1133	87.420	7.1455
30.0	10.5461	33.7089	25.851	214.54	0.069	0.2126	80.040	7.6247
40.0	10.0117	33.6948	25.932	207.05	0.090	0.1080	89.150	6.0153
50.0	9.8835	33.7338	25.984	202.30	0.111	0.1168	89.660	4.9730
60.0	9.6714	33.7958	26.068	194.53	0.131	0.1300	89.250	5.0381
70.0	9.6014	33.8183	26.097	191.95	0.150	0.1359	89.800	4.7077
80.0	9.3948	33.8588	26.163	185.90	0.169	0.1336	89.720	4.4984
100.0	8.9976	33.9549	26.302	173.03	0.205	0.1448	89.930	3.7241
150.0	8.2959	33.9880	26.437	160.98	0.288	0.0606	90.190	3.8684
200.0	7.6295	34.0395	26.576	148.42	0.365	0.0018	90.340	3.4457
250.0	7.1020	34.0456	26.656	141.44	0.437	-0.0687	90.400	3.1065
300.0	6.4893	34.0561	26.747	133.20	0.506	-0.1436	90.390	2.5447
350.0	6.2174	34.0874	26.808	128.01	0.572	-0.1547	90.400	1.8744
400.0	5.8767	34.1283	26.884	121.25	0.634	-0.1658	90.380	1.3436
450.0	6.0121	34.2295	26.947	116.09	0.693	-0.0695	90.300	0.7021
500.0	5.4932	34.2293	27.011	110.13	0.750	-0.1336	90.400	0.5439
550.0	5.4284	34.2856	27.064	105.72	0.804	-0.0974	90.350	0.3462
600.0	5.2347	34.3134	27.109	101.81	0.856	-0.0987	90.340	0.2600
650.0	4.9839	34.3454	27.164	96.89	0.905	-0.1026	90.340	0.2099
700.0	4.8404	34.3655	27.197	94.16	0.953	-0.1034	90.310	0.2031
750.0	4.6396	34.3907	27.239	90.36	0.999	-0.1060	90.310	0.2131
800.0	4.4977	34.4098	27.271	87.71	1.044	-0.1067	90.270	0.2578
1000.0	3.8545	34.4651	27.383	77.71	1.207	-0.1310	90.070	0.4907
1200.0	3.3747	34.5067	27.464	70.51	1.354	-0.1458	89.700	0.7897
1398.0	2.9394	34.5412	27.533	64.16	1.488	-0.1592	89.820	1.1182

## Appendix B. Nutrient Tables.

Nutrient data for standard Niskin bottle depths are listed chronologically by CTD station. Italics indicate that the reported values are in question. Note that nutrient sampling was not performed at every CTD station. Also note that water samples were not collected during this cruise for dissolved oxygen analysis. (See section 2c for further details on the properties listed in these tables.)

**STATION:** 1      **DATE:** May 3, 1999      0243 UT  
**LATITUDE:** 32° 06.94 N.      **LONGITUDE:** 126° 54.49 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
2.0	14.8390	33.299	0.25	2.26	0.15	0.01
9.2	14.8231	33.296	0.33	2.15	0.12	0.02
18.9	14.7459	33.296	0.48	2.13	0.04	0.01
40.0	14.7433	33.297	0.33	2.18	0.07	0.03
59.7	14.0885	33.223	0.32	2.33	0.05	0.00
80.2	13.8596	33.188	0.23	2.10	0.07	0.00
100.4	13.8256	33.187	0.29	2.06	0.06	0.07
199.8	11.3721	33.777	0.85	10.19	10.73	0.05
403.5	6.4829	34.005	2.34	52.93	33.00	0.02
604.6	5.0217	34.173	3.14	87.35	42.12	0.08
804.5	4.4314	34.349	3.06	108.20	43.98	0.01
1005.8	3.8717	34.449	3.20	106.60	42.91	0.05

**STATION:** 2      **DATE:** May 3, 1999      0812 UT  
**LATITUDE:** 32° 12.98 N.      **LONGITUDE:** 126° 47.86 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
2.5	14.8083	33.338	0.26	2.12	0.00	0.01
9.2	14.8130	33.360	0.24	1.70	0.00	0.03
19.6	14.8136	33.361	0.21	2.10	0.00	0.01
40.1	14.7377	33.345	0.46	1.86	0.00	0.01
59.4	14.5475	33.307	0.35	1.77	0.07	0.05
81.2	13.9770	33.207	0.32	1.96	0.04	0.04
100.3	13.9974	33.271	0.26	2.19	0.03	0.04
201.6	9.8782	33.729	1.19	18.57	19.24	0.00
401.9	6.4807	34.004	2.15	53.09	33.37	0.01
604.5	5.0427	34.197	3.05	87.68	42.49	0.02
805.8	4.3955	34.367	3.34	107.26	43.87	0.03
1006.8	3.8166	34.456	2.53	87.02	28.05	0.05

STATION: 3 DATE: May 3, 1999 1021 UT  
 LATITUDE: 32° 21.12 N. LONGITUDE: 126° 39.70 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
2.7	15.0132	33.474	0.48	4.95	0.10	0.02
10.6	15.0077	33.470	0.27	5.73	0.08	0.03
20.6	14.9977	33.468	0.20	6.75	0.06	0.03
40.4	15.0046	33.468	0.22	7.79	0.05	0.03
60.7	14.9430	33.474	0.20	8.96	0.06	0.02
82.0	15.0153	33.493	0.46	13.25	0.06	0.00
201.6	10.1491	33.882	1.14	16.56	17.01	0.02
401.9	6.5587	33.981	2.14	49.89	31.69	0.03
603.3	4.8550	34.157	2.92	91.38	42.63	0.03
806.1	4.4701	34.363	3.25	108.38	44.40	0.00
1007.6	3.8625	34.452	3.29	121.87	44.84	0.02

STATION: 5 DATE: May 3, 1999 1434 UT  
 LATITUDE: 32° 37.13 N. LONGITUDE: 126° 23.40 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1.4	14.4586	33.272	0.28	2.26	0.09	0.02
1010.5	3.7687	34.443	2.80	116.07	39.40	0.05
1260.8	3.1598	34.516	3.16	138.63	44.53	0.00
1260.8	3.1598	34.516	3.17	139.67	44.05	0.03
1764.7	2.3689	34.590	3.16	157.41	42.93	0.01
2273.0	1.8708	34.633	3.02	170.21	40.84	0.02
2273.0	1.8708	34.633	2.98	170.92	41.27	0.03
2527.0	1.7610	34.646	2.88	172.05	41.00	0.01
3039.0	1.5916	34.663	2.82	173.33	40.05	0.02
3555.1	1.4961	34.676	2.72	170.99	38.51	0.01
4059.6	1.4897	34.683	2.81	163.14	38.03	0.02
4311.7	1.5100	34.684	2.84	163.83	37.67	0.01

STATION: 6 DATE: May 3, 1999 1827 UT  
 LATITUDE: 32° 45.27 N. LONGITUDE: 126° 15.23 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1.9	14.5405	33.270	0.35	2.11	0.11	0.02
10.7	14.5020	33.271	0.32	1.86	0.12	0.02
20.8	14.4410	33.270	0.25	2.36	0.09	0.03
40.8	14.4085	33.268	0.30	2.82	0.10	0.01
60.6	14.3776	33.265	0.18	3.53	0.10	0.01
80.7	13.8052	33.283	0.20	3.27	0.09	0.01
101.1	14.2801	33.550	0.22	3.61	0.49	0.09
201.4	9.2213	33.878	1.45	24.16	22.60	0.03
403.9	6.4651	34.081	2.52	60.53	36.61	0.03
604.2	5.1946	34.233	3.44	88.45	40.87	0.01
806.5	4.2833	34.359	3.29	111.89	44.29	0.02
1008.3	3.7442	34.450	3.15	122.97	44.79	0.01

STATION: 7 DATE: May 3, 1999 2031 UT  
 LATITUDE: 32° 53.21 N. LONGITUDE: 126° 06.95 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1.4	14.2083	33.207	0.30	2.30	0.16	0.04
9.4	14.1644	33.212	0.29	1.99	0.18	0.02
19.5	14.0768	33.206	0.42	2.16	0.19	0.02
41.4	14.0123	33.206	0.20	1.89	0.17	0.03
60.5	13.9944	33.206	0.32	1.88	0.28	0.03
80.0	13.6606	33.246	0.18	1.79	0.25	0.05
100.3	13.7853	33.209	0.19	1.84	0.20	0.00
200.7	9.2337	33.840	1.57	24.04	23.04	0.02
401.0	6.3647	34.053	2.56	59.41	36.20	0.03
604.3	5.0687	34.234	3.07	91.81	42.77	0.03
803.7	4.2973	34.379	3.15	90.74	42.76	0.02
1008.8	3.7306	34.457	3.09	126.15	44.79	0.01

STATION: 9 DATE: May 4, 1999 0044 UT  
 LATITUDE: 33° 09.21 N. LONGITUDE: 125° 50.43 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
3.0	14.2756	33.238	0.44	1.52	0.05	0.03
1258.7	3.1483	34.518	2.91	136.67	44.32	0.01
1258.7	3.1483	34.518	3.22	139.10	44.30	0.01
1511.8	2.6782	34.558	3.07	151.04	43.81	0.01
1765.8	2.2700	34.590	2.49	160.09	42.72	0.02
2018.4	1.9972	34.619	2.85	166.54	41.76	0.01
2274.6	1.8297	34.637	2.58	173.60	41.69	0.02
2528.1	1.7100	34.648	2.88	171.75	41.07	0.00
3548.0	1.4863	34.677	2.79	169.43	38.77	0.00
3548.0	1.4863	34.677	2.66	171.47	38.60	0.01
4060.2	1.4927	34.682	2.22	127.12	26.38	0.04
4493.5	1.5304	34.684	2.43	165.08	38.07	0.02

STATION: 10 DATE: May 4, 1999 0646 UT  
 LATITUDE: 33° 17.30 N. LONGITUDE: 125° 42.29 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1.6	14.2145	33.236	0.48	2.17	0.05	0.03
10.4	14.2169	33.235	0.33	2.06	0.06	0.00
21.0	14.2325	33.242	0.30	1.93	0.12	0.01
39.3	14.2561	33.314	0.16	1.76	0.05	0.02
59.5	14.2184	33.309	0.14	1.67	0.03	0.03
80.2	14.2011	33.306	0.28	1.52	0.06	0.00
100.1	14.1293	33.302	0.34	1.43	0.17	0.18
201.3	8.9583	33.890	1.09	25.76	24.15	0.03
403.6	6.1052	34.033	2.42	59.82	36.34	0.01
601.8	4.8382	34.182	3.05	86.24	41.85	0.02
806.5	4.4170	34.370	3.32	110.44	44.42	0.00

STATION: 11      DATE: May 4, 1999      0908 UT  
 LATITUDE: 33° 25.10 N.      LONGITUDE: 125° 33.84 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1.5	14.0912	33.222	0.27	2.43	0.10	0.01
9.9	14.0951	33.222	0.29	2.07	0.11	0.01
20.1	14.1048	33.222	0.14	2.12	0.05	0.00
40.5	14.0836	33.229	0.14	2.06	0.06	0.00
60.4	13.9352	33.224	0.23	1.91	0.04	0.01
80.5	13.9097	33.228	0.16	1.88	0.03	0.00
101.1	13.5161	33.214	0.24	2.33	0.56	0.01
202.1	8.9809	33.908	1.40	21.82	20.05	0.00
403.0	6.2278	34.021	2.22	59.02	35.50	0.01
604.3	5.1178	34.223	3.07	89.03	42.24	0.01
805.7	4.3625	34.388	3.16	108.76	44.36	0.00
1007.3	3.7713	34.457	3.21	123.54	44.73	0.01

STATION: 13      DATE: May 4, 1999      1316 UT  
 LATITUDE: 33° 41.09 N.      LONGITUDE: 125° 17.00 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1006.6	3.7481	34.470	3.23	125.48	44.52	0.04
1261.3	3.1410	34.529	3.16	136.04	36.47	0.02
1515.1	2.7294	34.564	3.32	147.09	37.76	0.00
1766.0	2.3787	34.593	3.36	159.44	42.80	0.02
2019.5	2.1121	34.618	3.37	164.08	39.93	0.01
3036.4	1.5935	34.663	2.75	175.58	39.96	0.04
2528.0	1.7599	34.646	2.66	151.79	33.84	0.01
3036.4	1.5935	34.663	2.61	169.08	36.57	0.03
3545.5	1.4999	34.676	2.74	173.82	38.63	0.03
4059.6	1.4874	34.683	2.63	164.43	35.22	0.04
4059.6	1.4874	34.683	2.52	163.53	37.78	0.04
4059.6	1.4874	34.683	2.73	165.20	36.24	0.07

STATION: 14      DATE: May 4, 1999      1739 UT  
 LATITUDE: 33° 49.08 N.      LONGITUDE: 125° 08.61 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1.8	11.7241	32.826	0.53	1.89	0.88	0.05
9.9	11.6736	32.834	0.38	1.88	0.89	0.04
20.0	11.5593	32.868	0.47	1.67	1.17	0.03
40.1	11.7286	32.968	0.53	2.03	1.54	0.04
59.7	11.9278	33.051	0.75	2.19	2.24	0.10
79.9	11.2903	33.047	0.86	4.57	4.81	0.09
101.0	10.8902	33.490	1.45	15.86	16.55	0.20
199.4	8.4089	33.992	1.58	31.94	25.49	0.01
402.0	6.3026	34.117	2.66	67.07	38.42	0.03
605.1	4.7192	34.222	2.98	88.64	36.49	0.03
805.6	4.3227	34.373	3.40	112.98	44.59	0.04
1010.2	3.6718	34.469	3.26	127.52	45.07	0.03

STATION: 15      DATE: May 4, 1999      1944 UT  
 LATITUDE: 33° 56.93 N.      LONGITUDE: 125° 00.20 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1.8	12.4361	33.136	0.76	2.10	1.82	0.07
9.7	12.4081	33.140	0.56	1.92	1.80	0.07
19.9	12.3732	33.142	0.52	1.83	1.79	0.08
41.0	12.2569	33.186	0.45	1.35	1.73	0.05
59.9	12.1196	33.236	0.60	1.44	2.30	0.13
81.9	11.0538	33.213	0.87	7.73	7.72	0.19
104.4	10.2986	33.652	1.50	18.69	19.58	0.07
202.6	8.3307	34.003	1.99	30.31	24.93	0.03
401.8	5.9055	34.085	2.84	67.17	36.07	0.01
605.5	4.7235	34.204	3.26	95.30	42.20	0.03
806.2	4.1440	34.356	3.28	110.85	40.10	0.01
1008.5	3.7796	34.457	3.11	120.38	41.51	0.03

STATION: 17      DATE: May 4, 1999      2351 UT  
 LATITUDE: 34° 12.77 N.      LONGITUDE: 124° 43.18 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1008.6	3.6805	34.465	3.22	124.15	44.40	0.02
1262.0	3.0878	34.522	3.35	136.31	40.73	0.00
1514.4	2.6464	34.563	3.32	152.07	43.86	0.01
1767.3	2.2746	34.592	3.03	148.81	38.61	0.02
2019.4	2.0077	34.617	3.20	168.79	42.26	0.01
2529.3	1.7234	34.649	2.87	170.55	40.53	0.03
2529.3	1.7234	34.649	2.64	170.58	40.21	0.01
3037.6	1.5846	34.664	2.87	174.30	39.87	0.02
3548.6	1.5019	34.675	2.52	146.92	31.07	0.02
4059.6	1.4905	34.683	2.83	165.16	37.89	0.02
4493.2	1.5264	34.684	2.64	163.15	38.01	0.03
4493.2	1.5264	34.684	2.67	163.04	37.86	0.02

STATION: 18      DATE: May 5, 1999      0414 UT  
 LATITUDE: 34° 20.47 N.      LONGITUDE: 124° 34.79 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1.7	12.6516	33.183	0.66	1.59	1.58	0.10
9.4	12.6473	33.180	0.56	1.59	1.53	0.06
19.3	12.5806	33.279	0.52	1.30	2.24	0.13
39.4	12.2419	33.311	0.77	2.14	3.24	0.13
61.0	12.1237	33.316	0.77	3.09	4.16	0.16
78.6	10.6011	33.424	1.20	15.42	15.00	0.39
100.3	9.8294	33.629	1.67	22.70	22.14	0.03
204.2	8.0774	34.040	2.05	39.49	30.58	0.01
403.2	5.6906	34.089	2.90	73.95	39.87	0.02
603.0	4.6943	34.275	2.98	88.76	38.80	0.03
806.3	4.2130	34.406	2.74	94.77	32.49	0.01
1009.6	3.6652	34.469	2.91	123.33	38.73	0.09



STATION: 19      DATE: May 5, 1999      0643 UT  
 LATITUDE: 34° 28.45 N.      LONGITUDE: 124° 26.10 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
3.2	12.3951	33.037	0.49	1.57	1.04	0.05
11.3	12.3928	33.035	0.53	1.56	0.99	0.03
19.9	12.3963	33.033	0.46	1.50	0.96	0.03
40.7	12.4582	33.190	0.52	1.21	1.77	0.12
60.2	11.9562	33.237	0.63	4.01	4.53	0.14
80.8	10.3786	33.559	1.54	16.94	18.57	0.06
102.4	9.7366	33.787	1.71	19.87	20.75	0.03
203.0	7.9925	34.061	2.31	40.85	31.82	0.03
402.5	5.5331	34.098	2.57	63.70	34.61	0.01
603.5	4.6935	34.280	2.92	77.79	34.98	0.03
805.3	4.1519	34.404	3.07	106.17	37.43	0.00
1007.6	3.6021	34.477	3.35	123.17	43.99	0.04

STATION: 21      DATE: May 5, 1999      1136 UT  
 LATITUDE: 34° 44.32 N.      LONGITUDE: 124° 09.04 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1007.6	3.6942	34.464	3.00	120.69	35.88	0.06
1257.1	3.1397	34.524	3.25	133.60	44.01	0.05
1513.9	2.6934	34.561	3.08	136.81	38.65	0.02
1766.7	2.3197	34.589	3.17	153.92	41.25	0.05
2021.8	2.0631	34.615	2.92	141.70	34.93	0.03
2272.6	1.8749	34.632	2.87	155.01	41.13	0.25
2527.7	1.7804	34.646	2.79	161.39	36.27	0.05
3037.5	1.6123	34.664	2.73	155.77	34.98	0.02
3548.0	1.5214	34.675	2.75	165.80	37.77	0.04
4058.2	1.4905	34.683	2.56	155.58	33.03	0.02
4271.9	1.5050	34.684	2.64	156.57	37.97	0.02
4273.3	1.5052	34.684	2.64	158.10	38.26	0.03

STATION: 22      DATE: May 5, 1999      1607 UT  
 LATITUDE: 34° 51.94 N.      LONGITUDE: 124° 00.25 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1.7	12.7200	33.295	0.57	3.16	2.17	0.12
11.0	12.7100	33.295	0.56	3.12	2.62	0.13
20.6	12.7071	33.296	0.55	3.12	2.66	0.19
60.2	12.7080	33.294	0.55	2.57	2.08	0.12
60.2	12.7080	33.294	0.54	2.41	2.06	0.11
80.6	11.6143	33.275	0.84	5.95	6.10	0.24
99.2	10.6717	33.520	1.42	14.95	16.61	0.15
200.7	8.1996	34.019	2.25	37.25	29.79	0.01
402.4	5.8125	34.039	2.85	65.21	38.50	0.01
602.7	5.0766	34.280	3.21	89.22	43.08	0.02
804.0	4.3473	34.394	3.34	104.60	44.76	0.01
1024.4	3.6719	34.470	3.36	118.08	44.66	0.02

STATION: 23                      DATE: May 5, 1999                      1849 UT  
 LATITUDE: 35° 00.14 N.                      LONGITUDE: 123° 51.72 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1.6	12.6611	33.300	0.59	2.66	2.38	0.10
11.0	12.6454	33.301	0.53	2.58	2.46	0.14
21.2	12.6400	33.300	0.52	2.46	2.37	0.10
60.0	12.5945	33.301	0.48	2.46	2.40	0.11
80.5	11.2551	33.305	1.07	9.59	10.49	0.33
102.5	10.2322	33.678	1.51	19.44	21.05	0.05
203.7	8.1219	34.012	2.10	34.57	28.75	0.00
401.4	5.9471	34.066	2.81	64.36	38.64	0.01
604.7	5.0821	34.271	2.99	86.78	41.11	0.56
805.8	4.3628	34.392	3.36	104.94	44.34	0.03
1009.0	3.7305	34.465	3.13	114.38	40.10	0.05

STATION: 25                      DATE: May 5, 1999                      2350 UT  
 LATITUDE: 35° 15.62 N.                      LONGITUDE: 123° 34.20 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1003.7	3.7976	34.460	3.08	120.73	44.63	0.02
1262.7	3.1696	34.523	3.03	132.18	42.11	0.00
1514.2	2.6985	34.565	3.34	142.80	43.77	0.01
1764.4	2.2897	34.592	2.93	152.23	43.17	0.01
2019.2	2.0623	34.618	3.14	154.60	42.24	0.01
2274.8	1.8887	34.634	2.93	158.18	41.40	0.07
2530.3	1.7635	34.646	2.79	158.43	36.32	0.05
2770.8	1.6916	34.657	2.88	157.34	40.35	0.02
3036.2	1.6229	34.664	2.66	157.27	40.09	0.02
3533.9	1.5507	34.673	2.85	154.81	36.64	0.01
4035.7	1.4958	34.683	2.59	156.32	36.85	0.02
4035.5	1.4959	34.683	2.67	155.42	33.75	0.01

STATION: 26                      DATE: May 6, 1999                      0356 UT  
 LATITUDE: 35° 23.32 N.                      LONGITUDE: 123° 25.66 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1.7	12.5598	33.367	0.59	2.88	2.79	0.10
10.6	12.5609	33.368	0.59	2.67	2.80	0.10
19.9	12.5633	33.368	0.57	2.70	2.85	0.16
39.6	12.5321	33.374	0.49	2.68	2.79	0.10
62.2	12.4101	33.363	0.60	2.84	3.01	0.09
81.9	10.5848	33.572	1.28	14.71	16.20	0.31
99.9	9.7023	33.746	1.79	22.57	22.89	0.35
199.8	7.9777	34.045	2.33	40.14	31.37	0.05
402.0	5.6536	34.058	2.46	56.27	32.70	0.27
603.1	4.7216	34.248	3.22	92.70	42.57	0.00
805.7	4.3314	34.394	3.06	111.64	37.94	0.01
1008.0	3.7434	34.466	3.19	137.22	42.80	0.15

STATION: 27      DATE: May 6, 1999      0617 UT  
 LATITUDE: 35° 31.17 N.      LONGITUDE: 123° 16.80 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1.9	12.2321	33.307	0.77	1.80	2.57	0.28
11.3	12.2599	33.308	0.64	1.70	2.53	0.12
20.3	12.1905	33.295	0.56	1.45	2.43	0.14
40.7	12.2116	33.303	0.54	1.09	2.47	0.10
60.5	12.4321	33.360	0.57	2.19	2.79	0.13
80.3	10.5887	33.515	1.27	13.28	14.42	0.24
99.7	9.9784	33.623	1.70	21.28	21.77	0.06
202.9	8.2694	34.020	1.90	34.98	27.86	0.24
403.9	6.1293	34.143	2.96	69.02	39.25	0.00
603.7	4.9125	34.291	3.29	96.08	43.61	0.00
805.5	4.2311	34.387	3.44	113.04	44.87	0.01

STATION: 29      DATE: May 6, 1999      1100 UT  
 LATITUDE: 35° 46.93 N.      LONGITUDE: 122° 59.36 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1008.9	3.7953	34.463	3.08	123.28	44.02	0.01
1259.7	3.1823	34.515	3.14	139.88	44.53	0.02
1512.8	2.7114	34.555	3.27	149.57	44.14	0.02
1765.9	2.3510	34.586	--	159.49	42.76	0.10
2020.4	2.0966	34.612	2.79	164.53	39.10	0.23
2273.2	1.8901	34.637	2.91	165.29	35.43	0.02
2525.5	1.7746	34.646	2.94	168.80	40.63	0.01
2780.6	1.7257	34.656	2.99	169.13	39.91	0.02
3029.7	1.6625	34.662	2.76	169.19	38.39	0.07
3546.7	1.5778	34.672	2.82	169.91	38.99	0.00
3706.9	1.5551	34.675	2.92	170.80	38.92	0.01
3707.6	1.5551	34.675	2.76	171.79	38.52	0.11

STATION: 30      DATE: May 6, 1999      1518 UT  
 LATITUDE: 35° 54.48 N.      LONGITUDE: 122° 50.43 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
1.0	10.9497	33.143	0.85	4.14	4.50	0.09
10.3	10.8920	33.188	0.94	4.45	5.33	0.10
19.3	10.8639	33.209	0.92	5.62	6.32	0.10
39.5	10.6308	33.188	1.09	9.27	9.21	0.13
59.7	9.8764	33.419	1.45	17.66	15.87	0.14
79.0	9.7537	33.669	1.89	25.58	24.53	0.21
101.8	9.4354	33.813	2.07	27.15	25.97	0.12
199.7	7.9227	34.070	2.29	43.48	32.23	0.05
401.8	6.1909	34.183	3.00	71.39	39.51	0.01
604.0	5.1867	34.312	3.42	93.83	42.83	0.02
804.8	4.4317	34.409	3.39	110.62	44.17	0.05
1009.1	3.9384	34.459	3.47	120.82	44.31	0.07

STATION: 31                      DATE: May 6, 1999                      1739 UT  
 LATITUDE: 36° 02.38 N.                      LONGITUDE: 122° 44.49 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
0.9	10.8632	33.339	1.01	5.98	7.86	0.14
9.9	10.7672	33.370	1.05	6.95	8.89	0.17
19.4	10.6361	33.438	1.14	9.72	11.23	0.26
38.6	10.5336	33.609	1.32	11.97	13.65	0.22
59.2	10.3265	33.581	1.40	14.59	15.20	0.25
80.8	9.5851	33.807	2.00	26.17	25.56	0.10
100.2	9.3018	33.871	2.13	29.27	27.20	0.13
198.6	7.7479	34.046	2.40	41.85	31.46	0.04
403.1	6.2067	34.176	2.94	68.23	39.20	0.01
603.5	5.2598	34.298	3.19	88.42	41.49	0.00
805.0	4.4995	34.395	3.20	105.83	44.04	0.02
1007.6	3.8081	34.460	3.44	119.70	44.79	0.03

STATION: 33                      DATE: May 7, 1999                      0357 UT  
 LATITUDE: 36° 18.04 N.                      LONGITUDE: 122° 23.70 W.

Pressure	Temperature	Salinity	PO <sub>4</sub>	Si(OH) <sub>4</sub>	NO <sub>3</sub>	NO <sub>2</sub>
41.7	10.5146	33.737	1.70	18.46	17.59	0.32
58.5	9.8667	33.724	1.90	25.89	24.46	0.27
79.2	9.2583	33.885	2.18	32.27	28.45	0.26
98.7	8.8876	33.959	2.15	33.58	28.79	0.13
201.6	7.4640	34.041	2.43	44.43	31.87	0.00
400.0	5.9774	34.196	3.06	73.73	39.30	0.01
604.8	5.1766	34.317	3.09	82.08	36.31	0.04
806.0	4.5690	34.401	3.12	94.26	39.01	0.07
1008.0	3.8872	34.461	3.17	121.39	44.86	0.12
1397.4	2.9597	34.539	2.77	114.86	32.07	0.06

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